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DOUGLAS SHOAL REMEDIATION PROJECT

Sediment Sampling Field Report

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The Great Barrier Reef Marine Park Authority acknowledges the continuing sea country management and custodianship of the Great Barrier Reef by Aboriginal and Torres Strait Islander Traditional Owners whose rich cultures, heritage values, enduring connections and shared efforts protect the Reef for future generations.

Sediment Sampling Field Report

Douglas Shoal Remediation Project

Great Barrier Reef Marine Park Authority

3 June 2019

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Publication note: Appendix B and C not publicly released

1 Background

The bulk carrier 'Shen Neng 1' ran aground on Douglas Shoal in April 2010 and remained on the reef for 10-days before being re-floated. The total area directly impacted was approximately 42 ha which makes this incident the largest ship grounding scar known in the Great Barrier Reef Marine Park, and possibly the largest reef-related direct shipping impact in the world. The Great Barrier Reef Marine Park Authority (GBRMPA) established the Douglas Shoal Remediation Project (the Project) in late 2016 with funds from a court settlement associated with the grounding incident.

The Project has as its primary desired outcome that remediation activities support natural recovery at Douglas Shoal.

GBRMPA has identified three key concerns for the ongoing natural recovery in the grounding footprint at Douglas Shoal:

- Antifouling paint (AFP) – previous estimates are that up to 20 tonnes of AFP may have been scraped from the vessel and left on Douglas Shoal as large and small flakes of paint
- Rubble – significant amounts of rubble of various sizes were generated across the impact area by the vessel grounding
- Compaction – the previously complex topography of the site was 'ground down' to a relatively flat topography by the vessel.

Findings from studies undertaken at Douglas Shoal since the grounding were compiled and summarised in the Douglas Shoal Preliminary Site Assessment Report (Costen et al 2017). The report identified that no data are available for 77% of the grounding footprint and surmised that the distribution of physical damage and contamination is focused at four quite distinct areas, described as areas A, C, E and F. The report indicated that these areas represent priorities for further investigation and possible remediation.

In October 2018, Advisian were awarded a contract to provide Planning and Project Management services to GBRMPA for the Douglas Shoal Remediation Project. The planning services include the conduct of targeted fieldwork at Douglas Shoal within the grounding footprint and surrounds, followed by desktop investigations which will include remediation area delineation and options analysis.

The targeted field work includes two main components:

- Seafloor sediment sampling and subsequent laboratory analysis for both physical and chemical characteristics of sediment within the grounding footprint and surrounding areas
- Visual seafloor surveys to examine the extent of the physical damage and to characterise the benthic structure both inside and outside the grounding footprint.

This Field Report is concerned with describing the sediment sampling fieldwork.

1.1 Objectives

The objectives of the sediment sampling fieldwork were to:

- Address critical knowledge gaps regarding seafloor substrate including (particularly) depth of rubble, composition and Particle Size Distribution (PSD) of sediments and extent of AFP contamination
- Support finalisation of the priority remediation areas and establishment of remediation objectives
- Support establishment of a Monitoring, Evaluation, Reporting and Improvement (MERI) framework for the Project including through development of a georeferenced system to support future fieldwork and remediation management activities
- Facilitate knowledge capture in a systematic manner such that it may be shared and inform other remediation efforts.

1.2 Scope

Fieldwork was carried out in accordance with the approved Sampling and Analysis Plan (SAP) (Advisian, 2018). Minor variations to the SAP occurred during the planning and the execution of the field work. These were based on technical considerations, along with logistical and health and safety learnings identified through a scouting trip to Douglas Shoal in January 2019 and during the sediment sampling fieldwork in March 2019.

This report describes the sediment sampling fieldwork, is factual in nature and contains limited analysis of data captured in the field. The report does not describe results of laboratory analysis, or any assessment of these.

1.3 Report structure

This report has been structured to address the requirements of the contract between GBRMPA and Advisian for the fieldwork reports and includes:

- Daily logs for weather conditions, work tasks and person-hours worked
- Summary of sampling/surveys conducted and their preliminary findings
- Opportunistic observations that may be relevant for the Project
- Implications of the above findings for remediation planning or operational works
- Observations of unique or protected flora and fauna
- Observations on human visitation (commercial fishing, recreational fishing, low-level flights, etc)
- Observations on unusual conditions, such as visible flood plumes, oil slicks, coral spawn
- Evidence of natural recovery or colonisation of damaged/contaminated locations
- Lessons learned, issues or incidents experienced and opportunities for improvement in future
- Preliminary/selected photographs, videos, Geographic Information System (GIS) files or other data collected during fieldwork (relevant to key implications).

General observations were made at sediment sampling sites including:

- Evidence of any damage, metal or paint flakes
- Current state
- Visibility
- Sediment type
- Replicate measurements of the depth of sediment at the sampling site and surrounds
- Issues with sampling.

These general observations are also described in this report where relevant.

2 Field trip details

The sediment collection field trip was originally scheduled for December 2018. Delays due to the passage of several cyclones and adverse marine weather during the subsequent months meant the first possible weather window for mobilisation did not present itself until March 2019.

2.1 Daily activity

The sediment sampling field work was conducted over a 17-day period between the 6th and the 22nd of March 2019 (including mobilisation and demobilisation). Summary information regarding daily activities is provided in Table 2-1. The retrieval, download and redeployment of two Acoustic Doppler Current Profiler (ADCP) units was also completed during this trip. Although this is not the focus of this report, summary detail regarding this ADCP activity is provided below.

Further and more detailed information regarding daily activities is provided in the Appendices as follows:

- Appendix A – **Site specific sediment collection details** which includes the date and time of sediment collection, sea state and weather conditions, current state, underwater visibility, sediment type, evidence of any damage, metal or paint flakes, replicate measurements of the depth of sediment at the sampling site and surrounds and any issues with sampling
- Appendix B – **Daily logs** of activities detailing the pre-start meeting and specific times of all daily activities
- Appendix C – **Dive logs** which outline every dive undertaken including time of dive, time taken, location and diver.

Table 2-1 Summary of daily activity

Day	Date	Weather conditions	Activity
1	Wednesday 6 March	N/A	Advisian and subcontractors mobilise to Gladstone. Provisioning of the vessels White Shark and Eastern Voyager. The vessel Brynda departs Mackay and steams to North West Island via Yeppoon. Hyperbaric chamber induction for Subsea staff.
2	Thursday 7 March	SE wind 10-15kts, gusting 15-20kts, 1-1.5m swell	Eastern Voyager induction for all personnel. Eastern Voyager, White Shark and personnel depart Gladstone for North West Island at 0900. All vessels (including Brynda) arrive at North West island at 1600.

Day	Date	Weather conditions	Activity
3	Friday 8 March	SE wind 10-15kts, gusting 15-20kts, 1-1.5m swell, squally rain periods	Sediment sampling
4	Saturday 9 March	SE wind 10kts shifting NW in afternoon 10kts, 1.0m swell	Sediment sampling
5	Sunday 10 March	NE wind 10kts 1.0m swell	Sediment sampling
6	Monday 11 March	NE wind 10kts 1.0m swell	Sediment sampling
7	Tuesday 12 March	NE wind 10kts 1.0m swell in the morning, gusty storm in the afternoon evening Southerly winds 20-30kts, 2.0m swell	Sediment sampling
8	Wednesday 13 March	NE wind 10kts 1.0m swell	Standby Day
9	Thursday 14 March	NE wind 10kts <1.0m swell	Sediment sampling and ADCP retrieval and download
10	Friday 15 March	NE wind 10kts <1.0m swell	Sediment sampling
11	Saturday 16 March	NE wind 10kts <1.0m swell	Sediment sampling and ADCP deployment
12	Sunday 17 March	NE wind 10kts <1.0m swell	Sediment sampling
13	Monday 18 March	Variable wind <10kts <1.0m swell	Sediment sampling
14	Tuesday 19 March	Variable wind <10kts <1.0m swell	Sediment sampling
15	Wednesday 20 March	Variable wind <10kts <1.0m swell	Sediment sampling

Day	Date	Weather conditions	Activity
16	Thursday 21 March	NE wind 10kts <1.0m swell	All vessels and personnel depart North West Island at 0600. All vessels arrive back in Gladstone at 1400.
17	Friday 22 March	N/A	Advisian and subcontractors demobilise to base

2.2 Vessels and personnel

Three vessels were utilised during the field trip, the 'Eastern Voyager' the 'Brynda' and the 'White Shark' and each is briefly described below:

- The Eastern Voyager a 22m long single hull steel vessel was the designated 'mother ship' where all personnel slept and ate breakfast and dinner. The Eastern Voyager was primarily anchored at North West Island during the trip except during crew changeovers, to drop off samples at Heron Island, and for ADCP retrieval and deployment at Douglas Shoal.
- The Brynda a 12m long single hull aluminium vessel was the designated dive operations vessel where up to 12 personnel performed the collection and processing of the sediment samples.
- The White Shark a 6m long twin hull fiberglass Sharkcat-style vessel supported the Brynda-based dive operations. The White Shark dropped and retrieved surface marker floats at each of the designated sediment sampling sites and provided crew and general support.

Figure 2-1 shows an aerial view of Brynda and White Shark positioned over Douglas Shoal.

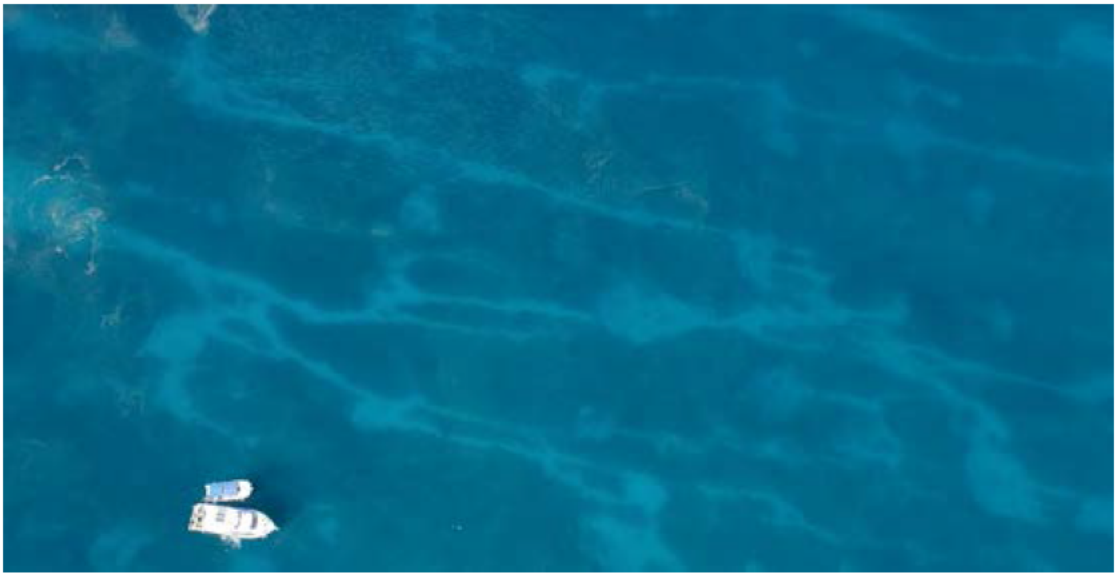


Figure 2-1 Aerial view of 'Brynda' and 'White Shark' positioned over Douglas Shoal

Publication note: Personal names removed

A host of specialist personnel were present on the field trip as summarised in Table 2-2.

Table 2-2 List of personnel, roles and dates of deployment

Name	Role	Company	Dates
[redacted]	Advisian Field Representative and Field Operations Lead Principal Marine Scientist, Skipper, Diver	Advisian	Entire Trip
[redacted]	ADCP Lead Senior Marine Scientist	Advisian	8th – 12th March
[redacted]	Subsea Field Representative*, Subsea Dive Superintendent* Dive Operations Lead, Dive Supervisor, Skipper, Diver	Subsea	Entire Trip
[redacted]	Diver, Skipper	Subsea	Entire Trip
[redacted]	Dive Supervisor, Skipper, Diver,	Subsea	Entire Trip
[redacted]	Diver, Skipper, Dive Medical Technician	Subsea	Entire Trip
[redacted]	Diver	Subsea	Entire Trip
[redacted]	USBL Operator	Subsea	Entire Trip
[redacted]	General Hand	Gidarjil (Contracted to Subsea)	Entire Trip
[redacted]	General Hand	Gidarjil (Contracted to Subsea)	Entire Trip
[redacted]	Skipper (Eastern Voyager)	Tura Charters (Contracted to Subsea)	6th – 17th March
[redacted]	Skipper (Eastern Voyager)	Tura Charters (Contracted to Subsea)	Entire Trip

Name	Role	Company	Dates
[redacted]	Deckhand/Cook (Eastern Voyager)	Tura Charters (Contracted to Subsea)	Entire Trip
[redacted]	Skipper (Eastern Voyager)	Tura Charters (Contracted to Subsea)	17th – 21st March
[redacted]	Managing Director	Subsea	19th – 20th March
[redacted]	Assistant Director/ Observer	GBRMPA	18th – 21st March
[redacted]	Observer	Gidarjil	18th – 21st March

*NB While [redacted] was Subsea's designated representative, designated Health Safety and Environmental (HSE) management roles rotated dependent on the vessels being used, the skipper in charge of vessels and dive operations team rotation.

2.3 Summary of sampling

2.3.1 Sediment sampling method

2.3.1.1 Sample collection

Typical field operations for the collection of sediment are described in the steps set out below and are illustrated in Figure 2-2 to Figure 2-10.

1. During the pre-start meetings the day's activities would be planned and the previous day's 'lessons learnt' communicated. Sites selected for the day's sampling would be chosen based on the current, depth and sea state predicted for the day e.g. deeper sites would be targeted during low tidal states and vice versa to maximise dive times.
2. The two work vessels, White Shark and Brynda would depart North West Island, fully provisioned for the day between 0600 and 0800. Provisioning was made to avoid or minimise the need for transfers of gear or personnel at Douglas Shoal due to the risk associated with vessel to vessel transfers at the shoal. The White Shark was crewed by a Skipper and one general hand. The Brynda was crewed by all other specialist personnel.
3. Vessels would arrive at Douglas Shoal after 1.5hrs travel time. During this time the diver gear and sediment sampling equipment would be prepared and double checked if the weather and sea-state allowed.
4. The White Shark would navigate using pre-determined positions as outlined in the SAP using a Differential Global Positioning System (DGPS) to the first planned sediment sampling site and lower a marker bout attached to a weight and anchor. In the event the GPS position was not located on a sediment patch (visible from the surface) the float and weight would be deployed on the nearest sediment patch.

5. The Ultra Short Baseline (USBL) system would be started on the Brynda 30 minutes prior to the first dive to allow for the system to boot up and attain the satellite fix. Once the vessel arrived in the vicinity (within 100m) of the first site as indicated by the marker buoy deployed by the 'White Shark' the USBL transducer would be attached to the pole and lowered into the water.
6. Divers would fully kit up (tank, communications, shark shield, USBL transponder etc.) and all gear was checked and rechecked by the dive attendant and dive supervisor and noted on the dive log. Sediment sampling equipment would be cleaned, and camera gear checked and passed to the diver and attached.
7. Once all was ready including the USBL system the Brynda would carefully approach the marker float, the diver would stand on the duckboard at the rear of the boat with all required equipment to undertake the task.
8. Once the diver was adjacent to the float the vessel would be put in neutral and the diver notified by the attendant.
9. The diver would enter the water, swim to the float, indicate he was descending the line and attach himself to the line. The Brynda would coast clear then reengage the engine at a safe distance from the diver. The communication transducer would be lowered into the water at the front of the vessel and communications with the diver checked by the Dive Supervisor. Time of entry would be noted on the log.
10. The diver would descend to the seafloor and communicate the depth once bottom was reached and then again when sediment sampling began. At this point the USBL operator would save the position of the diver and inform the Dive Supervisor.
11. The diver would fill the tube with sediment and place a stopper over the open end of the sample tube. The diver then captures a full 360 degrees panorama of the site on the GoPro camera.
12. Once the diver had collected the sample and completed five sediment depth measurements (by hammering in a marked stainless-steel rod into the sediment) he would communicate to the Dive Supervisor he had finished. The Dive Supervisor would check with the Skipper and USBL operator that they were happy for the diver to leave bottom, and then communicate this to the diver.
13. Once instructed, the diver would leave the bottom and proceed slowly to the surface while the Brynda would proceed slowly back toward the surface marker.
14. During this process the 'White Shark' will have deployed a second marker on the next site to be sampled, ensuring the deployment of the marker will not interfere with the dive operations which are underway.
15. While the Brynda approaches the diver and marker, the dive attendant maintains close watch on the surface bubbles which provide a close approximation of the diver location. Once the Brynda is within 50m of the diver the engines are disengaged until the diver is seen and communicates to the Dive Supervisor that they are on the surface.
16. Once the diver is on the surface the Brynda approaches the diver and when within 15m disengages the engine and the dive attendant tosses a float line to the diver, the diver disengages from the float line and is pulled (and swims) by the dive attendant toward the rear of the vessel.
17. The diver grabs hold of the rear ladder and passes up all equipment including the sediment sampling tube, the camera and the stainless-steel rod to the dive attendant and sediment sampler. The diver turns off the shark shield and climb out of the water with support of the dive attendant.
18. Once clear of the water and safely back on the vessel the dive attendant yells all clear and the vessel is free to engage and proceed to the next site.

19. Once the Brynda is well clear (>50m) the White Shark retrieves the marker float/weight and anchor from the completed site and proceeds to the next site on the list to deploy the marker.

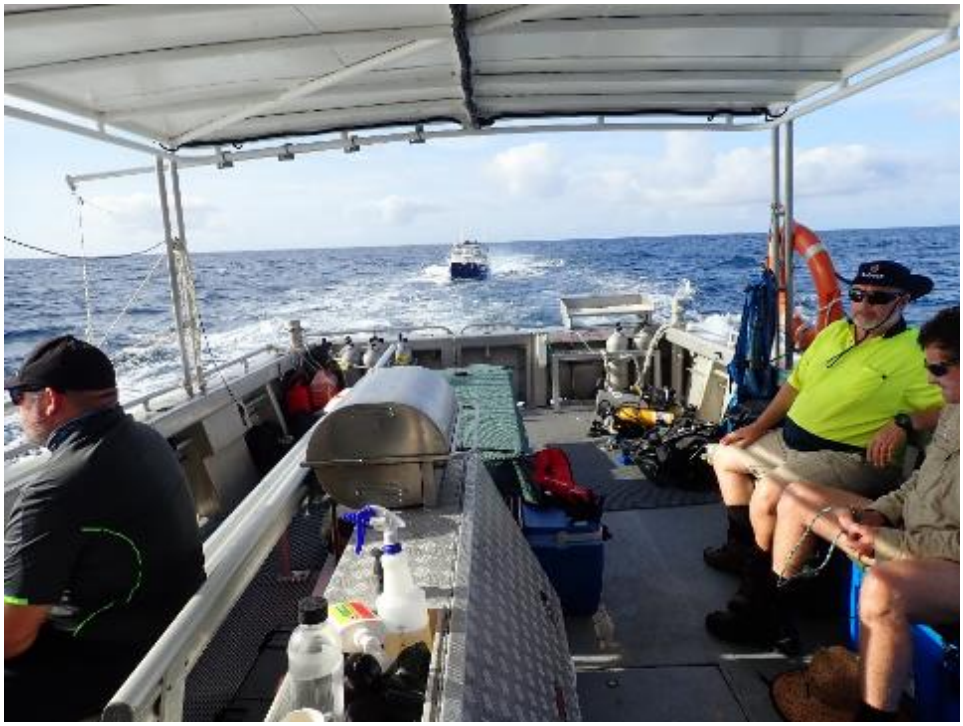


Figure 2-2 The Brynda and White Shark travelling to Douglas Shoal

Figure 2-3 The dive team preparing the dive equipment

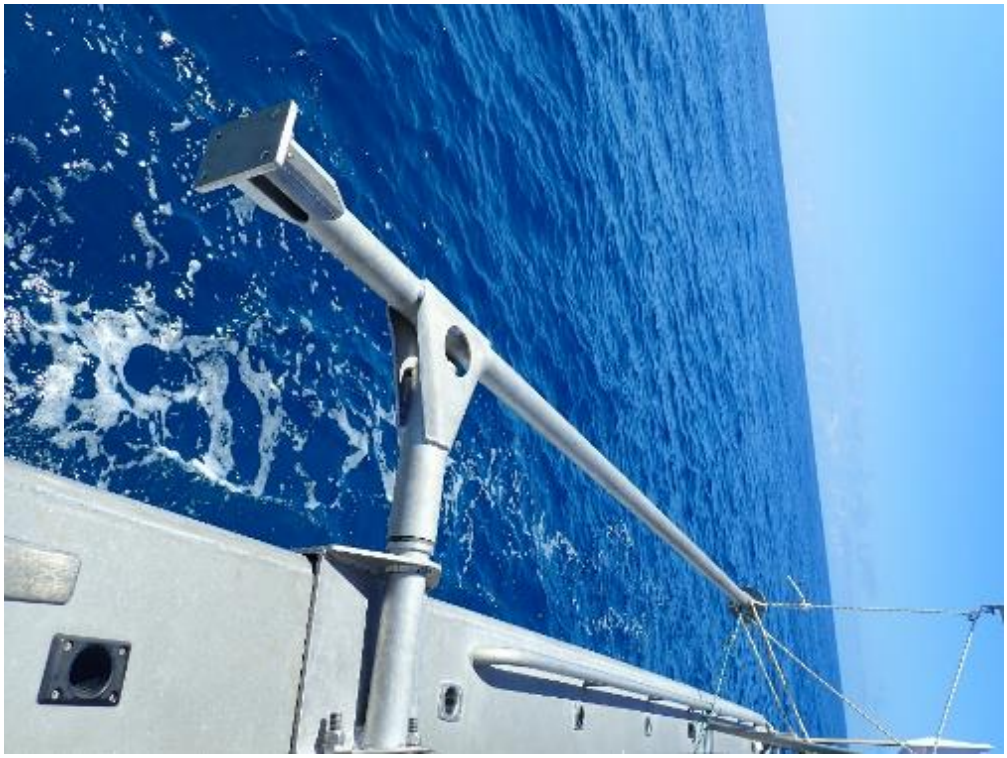


Figure 2-4 USBL pole prior to deployment

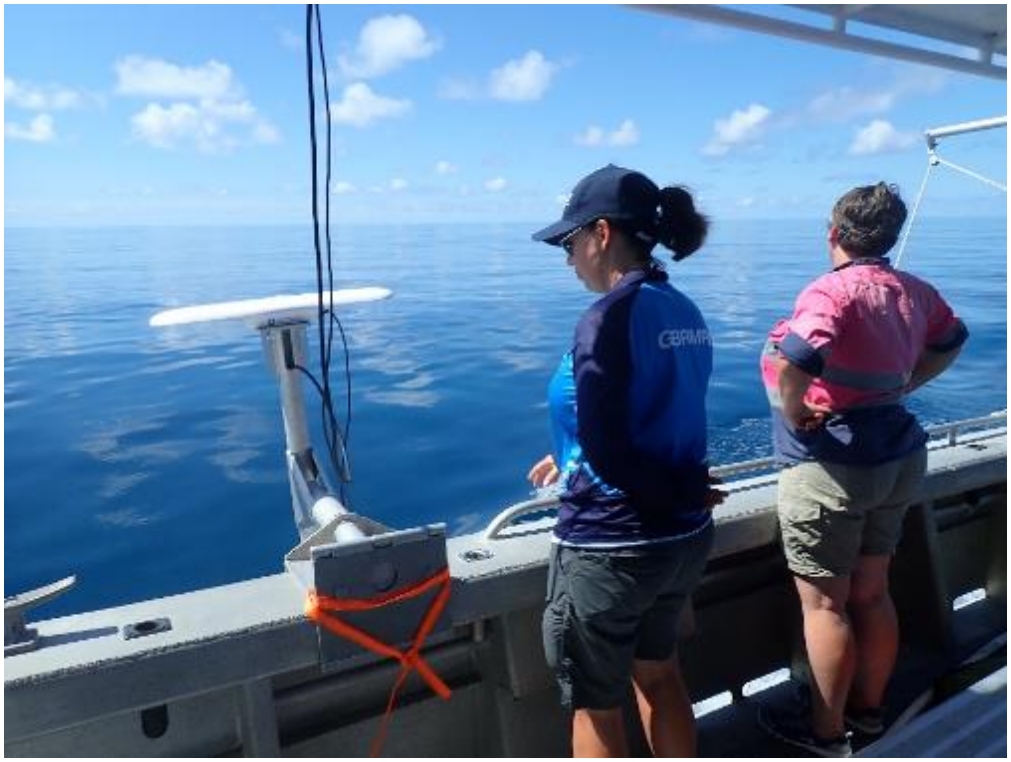


Figure 2-5 The USBL pole once deployed showing the navigational unit on top

Figure 2-6 Diver prepares for diving and undergoing pre-dive checks

Figure 2-7 Fully kitted diver preparing to enter the water

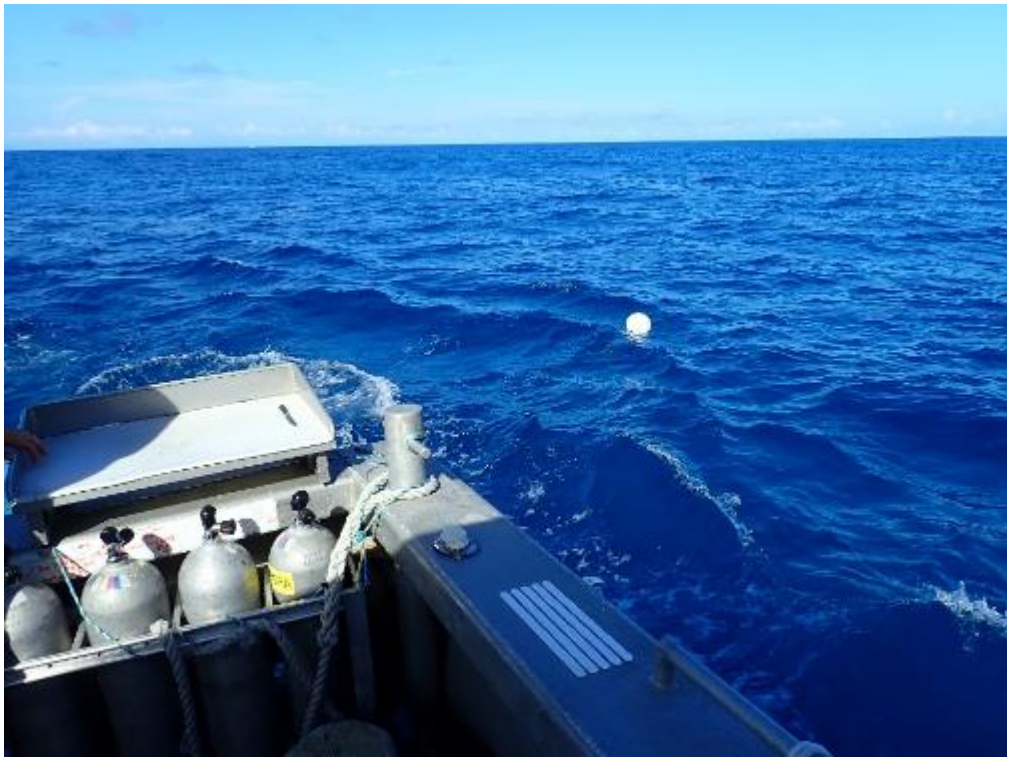


Figure 2-8 Brynda alongside site marker float as diver (out of view) enters the water

Figure 2-9 USBL operator in action

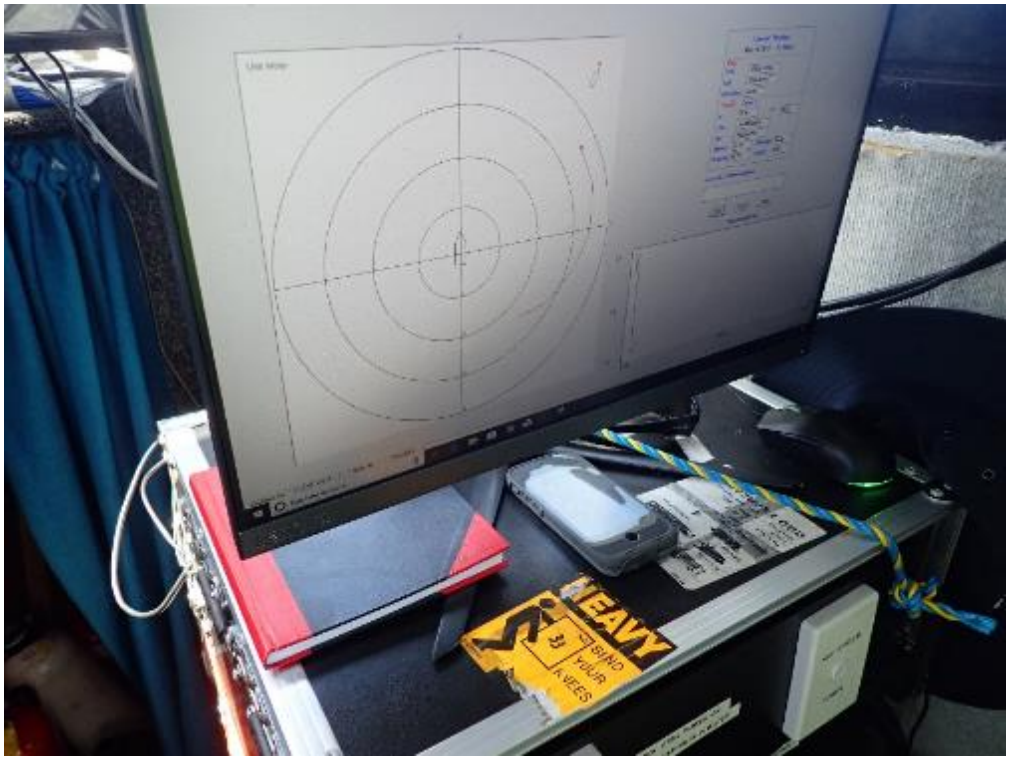


Figure 2-10 Close up of USBL system recording the location and movements of the divers

2.3.1.2 Sample processing

The typical sample processing steps are described below and are illustrated in Figure 2-11 to Figure 2-14:

1. At the start of the day just before sampling begins all equipment (bowls, spoons, and sample tubes) would be cleaned and rinsed ready for use. The sampler would don latex gloves to ensure no sunscreen or other contamination sources are transferred to the sample.
2. The appropriate number of jars and zip-lock bags would be labelled according to which site the sample was being collected from and the sampling details (date, time, weather, sampler site identification, depth etc.) recorded in the field book, with a separate sheet for each site.
3. The sediment tube full of sediment would be handed from the dive attendant to the sampler and the seawater trapped in the top of the sample tune decanted overboard, with care taken to ensure no sediment is tipped out.
4. The sample would be carefully tipped into a large clean stainless-steel mixing bowl and the sampling tube set aside.
5. Prior to mixing, a site-specific sediment sampling sheet with a measurement scale and which is marked with the sample identification, date and time is placed in the mixing bowl with the sediment and a photo is taken of the sheet and sample. The sheet is removed, and two more photos are taken to form the sediment log.

6. Sediment samples were then processed as per the SAP (Advisian, 2018) and summarised below:
    a. Field sampling procedures, conforming to Appendix F Field and laboratory quality assurance and quality control of the National Assessment Guidelines for Dredging (NAGD) (Commonwealth of Australia, 2009) were carried out to minimise the potential for cross contamination and preserve the sample integrity.
    b. The sediment samples were processed on board the support vessel by an experienced Advisian staff member. The sediment from each site was placed in an uncontaminated stainless-steel bowl and mixed thoroughly using a clean stainless-steel or plastic spoon. Sediment samples for tributyltin (TBT), Zineb and metals were then placed into appropriate jars.
    c. At sites where physical (particle size distribution (PSD) and settleability) samples were taken, these were placed in plastic zip lock bags using a stainless steel or plastic spoon.
    d. Care was taken to ensure a similar volume of sediment for chemical and physical analyses was collected from each site.
    e. Consistent chain of custody measures were implemented during dives, return to vessel and storage for collected samples e.g. all samples were placed immediately into eskies containing ice and kept at <6°C out of direct light, transferred to the freezer on the Eastern Voyager and transferred frozen to the ALS laboratory in Gladstone via Heron island.
    f. The samples were logged and then transferred in a frozen state to Brisbane for analysis.

Figure 2-11 Sample processing setup on board the Brynda

Figure 2-12 Sampling tube full of sediment ready for decanting and transfer to mixing bowl

Figure 2-13 Sediment log sheet with unmixed sample from sample site CX-2

Figure 2-14 Close up of sediment sample in the mixing bowl from site CX-2

2.3.2 Laboratory information

A summary of the primary (ALS) and secondary (NMI) laboratory workorders and their status at 9 May 2019 are provided in Table 2-3 and Table 2-4, respectively. Phase II laboratory analysis (as per NAGD) for contaminants and PSD from all sites sampled have been reported, with data yet to be collated and analysed. Phase III bioavailability (elutriate) analysis (as per NAGD) on 50 sediment samples for Zineb, TBT and (where applicable) copper and zinc are yet to be reported.

Table 2-3 Summary of primary laboratory (ALS) workorder status

Workorder	Matrix	Analysis Assigned	Due Date
EB1906974	15 Sediment / 5 Water (rinsate)	Metals, TBT & Total Organic Carbon (TOC)	Completed
EB1906947	34 Sediment	Metals, TBT & TOC	Completed
EB1906960	32 Sediment	Metals, TBT & TOC	Completed
EB1906964	41 Sediment	Metals, TBT & TOC	Completed
EB1906987	38 Sediment	PSD & Settling Rate	Completed
EB1907617	27 Sediment	Metals, TBT & TOC	Completed
EB1906986	10 Sediment	PSD & Settling Rate	Completed
EB1907620	36 Sediment	Metals, TBT & TOC	Completed
EB1908498	7 Sediment	Elutriate Re-batch - TBT & Zineb	Completed
EB1907623	31 Sediment	Metals, TBT & TOC	Completed
EB1906993	29 Sediment	PSD & Settling Rate	Completed
EB1907622	35 Sediment	Metals, TBT & TOC	Completed
EB1906982	25 Sediment	PSD & Settling Rate	Completed
EB1907624	12 Sediment / 8 Water (rinsate)	Metals, TBT & TOC	Completed
EB1907810	6 Sediment	Metals, TBT & TOC	Completed
EB1909443	28 Sediment	Elutriate Re-batch - TBT, Zineb & Metals	Completed

Workorder	Matrix	Analysis Assigned	Due Date
EB1907628	19 Sediment	PSD & Settling Rate	Completed
EB1907630	36 Sediment	PSD & Settling Rate	Completed
EB1907633	28 Sediment	PSD & Settling Rate	Completed
EB1907638	11 Sediment	PSD	Completed
EB1910608	21 Sediment	Triplicate Re-batch - TBT	Completed
EB1907639	4 Sediment	PSD	Completed
EB1907813	6 Sediment	PSD	Completed
EB1909703	21 Sediment	Elutriate Re-batch - TBT, Zineb & Metals	Completed
EB1910331	15 Sediment	Elutriate Re-batch - TBT & Zineb	16/05/2019
EB1910617	15 Sediment	Elutriate Re-batch - TBT, Zineb & Metals	24/05/2019

Table 2-4 Summary of secondary laboratory (NMI) workorder status

Workorder	Matrix	Analysis Assigned	Due Date
ADV102_190321	4 Sediment	Metals, TBT & TOC	Completed
ADV102_190321/1	2 Sediment	Re batch Metals, TBT & TOC	Completed
ADV102_190328	4 Sediment	Metals, TBT & TOC	Completed
ADV102_190328/1	2 Sediment	Re batch Metals, TBT & TOC	Completed

2.3.3 ADCP retrieval and deployment

During the field trip both ADCPs were retrieved, downloaded and redeployed. The method used to retrieve the ADCPS varied from that outlined in the SAP (Advisian, 2018) as follows:

1. The automatic buoys attached to the ADCP frames were triggered from the transponder unit on the Eastern Voyager located ~100m from the know position of the ADCP:
    a. The buoy attached to ADCP 1 buoy successfully deployed to the surface and was clearly visible floating on the surface after a couple of minutes
    b. The buoy attached to ADCP 2 was successfully triggered but remained just below the surface but observable from the surface by personnel on all vessels.
2. On both ADCPs, a diver was deployed from the Brynda.
3. The diver detached the anchor from the ADCP frame and placed a float line on the end of the chain to allow for reattachment during re-deployment.
4. The diver untangled the surface float rope on ADCP 2.
5. The diver then attached an uninflated lift bag to the ADCP frames and inflated the bag using air from a separate cylinder carried by the diver.
6. The air in the lift bag made the ADCP and frame easier to retrieve by personnel on the surface.
7. The diver returned to the surface and was picked up by the Brynda.
8. Once the Brynda was clear, the White Shark maneuvered to the ADCP buoy position, retrieved the buoy line and lifted the ADCP and frame to the surface using the onboard winch. The ADCP was secured to the side of the vessel and all ropes/lift bags were secured.
9. The White Shark then maneuvered toward the Eastern Voyager located nearby and the ADCP was transferred to the Eastern Voyager crane hook and detached from the White Shark.
10. The White Shark shifted position well away from the Eastern Voyager and the Eastern Voyager lifted the ADCPs onto the duckboard and secured the instruments ready for steaming back to North West Island.
11. The Eastern Voyager travelled back to North West Island for ADCP cleaning and download.
12. The deployment involved the Eastern Voyager lowering the ADCP unit and frame to the seafloor as close as possible to the buoyed ADCP anchor line using the ‘endless line’ technique.
13. A diver was deployed from the Brynda to re-attach the ADCP to the anchor line and detach the anchor line buoy, and then return to the vessel.

It is proposed that future retrieval and deployment of the ADCPs will utilise the non-diving techniques outlined in the SAP (Advisian, 2018).

2.4 Results and observations

2.4.1 Summary of sites visited

A total of 237 discrete sites were targeted for sediment sampling from the four priority remediation areas at Douglas Shoal. A total of 267 samples (includes triplicate and duplicate samples) were sent to the laboratories for analysis for chemical and physical characteristics. A summary of the sediment sampling in each priority area is provided in Table 2-5 and Figure 2-15 to Figure 2-19.

Table 2-5 Summary of the number of sites where sediment samples were collected from each Priority Area

Priority Area	Number of sites visited	Triplicate sites	Duplicate sites	PSD sites	Settleability sites
A	97	3	5	72	15
C	45	2	1	38	10
E	38	1	0	33	8
F	45	0	1	37	7
Reference	12	1	1	11	5
Totals	**237**	**7**	**8**	**191**	**45**

Of the 237 sites, 39 sites that had been sampled during previous field trips were re-visited, and 198 sites visited were new sites not previously investigated. Of the 237 sites, 48 sites were outside the priority areas. Twelve sites well outside the grounding footprint (Reference Sites) were visited.

Particle size distribution analysis was undertaken for sediments from 191 sites (a total of 210 samples analysed for PSD when triplicates and duplicate samples are included) and settleability analysis was undertaken for sediments from 45 sites.

At 15 of the 237 sites spread across each of the priority remediation areas, triplicate and duplicate samples were collected to facilitate intra and inter laboratory Quality Assurance and Quality Control (QA/QC) comparisons. Collection of duplicate and triplicate samples at Douglas Shoal presented challenges as follows:

- Sediment depths measured by the diver were on average less that 10cm (see Section 2.4.3)
- The collection of three samples (three separate full sample tubes) at many sites was restricted by the quantity of sediment available in proximity to the diver (<10m)

- Given the scarcity of sediment, the collection of samples at some sites presented logistical issues and a potential health and safety hazard during high current periods. These were associated with the drag during descent and traverse due additional sampling equipment, and the additional weight during ascent which affected diver buoyancy.

Additional QA/QC information on eight inter-batch laboratory analyses of Standard Reference Materials (SRM) was undertaken.

2.4.1.1 Preliminary laboratory results

As shown in Table 2-6, preliminary results of laboratory analysis (as at 24 April 2019) indicate that TBT has been found in sediment at levels above relevant guidelines (i.e. Upper Sediment Quality Guideline (SQG-High) and Sediment Quality Guideline Value (SQGV) as set out in Simpson et al (2013)) and is mostly confined to distinct subareas within Priority Area A where the ship initially hit the shoal.

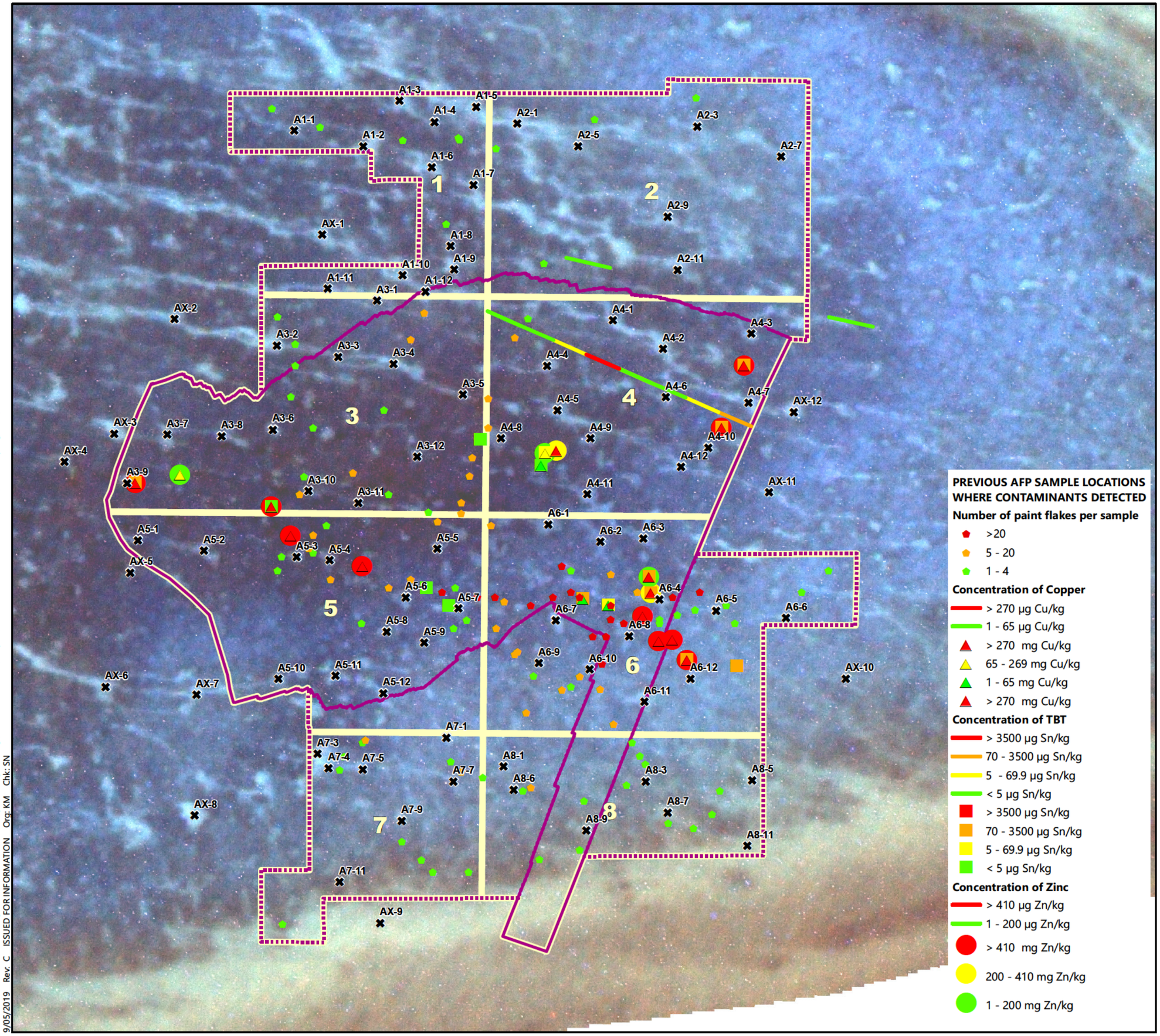
Table 2-6 Preliminary results of laboratory analysis for TBT (as at 24 April 2019)

Sediment Quality Criteria	Site/s [#]			
	Priority Area A	Priority Area C	Priority Area E	Priority Area F
TBT > 70 µg Sn/kg*	A3-1, A3-3, A3-4, A3-5, A3-11, A4-9, A4-10, A4-11, A5-5, A5-7, A5-9, A6-1, A6-2, A6-3, A6-7, A6-8, A6-9, A6-10, A6-11, A7-7, A8-6, A8-9, AX-2	CX-9	EX-7	
TBT > 9 µg Sn/kg[+] and < 70 µg Sn/kg*	A3-5, A3-6, A3-10a, A4-4, A4-5, A4-6, A5-3, A5-4, A5-6, A5-11, A6-4, A6-8a, A6-12, A7-1	C2-4, C2-10, CX-8		

* SQG-High, [+] SQGV, [#] TBT data was normalised to 1% organic carbon, dry weight

Douglas Shoal Remediation Planning
Sediment Field Report

Figure 2-15: Locations of sediment sampling sites in Priority Area A



PREVIOUS AFP SAMPLE LOCATIONS WHERE CONTAMINANTS DETECTED

Number of paint flakes per sample
- >20
- 5 - 20
- 1 - 4

Concentration of Copper
- > 270 µg Cu/kg
- 1 - 65 µg Cu/kg
- > 270 mg Cu/kg
- 65 - 269 mg Cu/kg
- 1 - 65 mg Cu/kg
- > 270 mg Cu/kg

Concentration of TBT
- > 3500 µg Sn/kg
- 70 - 3500 µg Sn/kg
- 5 - 69.9 µg Sn/kg
- < 5 µg Sn/kg
- > 3500 µg Sn/kg
- 70 - 3500 µg Sn/kg
- 5 - 69.9 µg Sn/kg
- < 5 µg Sn/kg

Concentration of Zinc
- > 410 µg Zn/kg
- 1 - 200 µg Zn/kg
- > 410 mg Zn/kg
- 200 - 410 mg Zn/kg
- 1 - 200 mg Zn/kg

Sediment sampling location

Priority area A

A

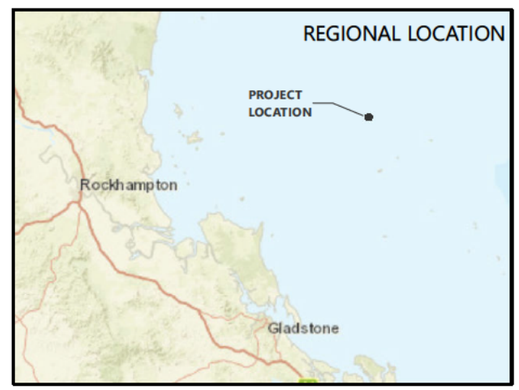
A - outside grounding

Source Information:
Grounding footprint, Priority areas
Cardno 2017
Previous AFP sampling
Costen et al 2017
Seafloor relectance imagery
EOMap 2019

Coordinate System: GCS GDA 1994
Datum: GDA 1994
Scale at A3 - 1:2,500

0 25 50 75 100
Metres

N



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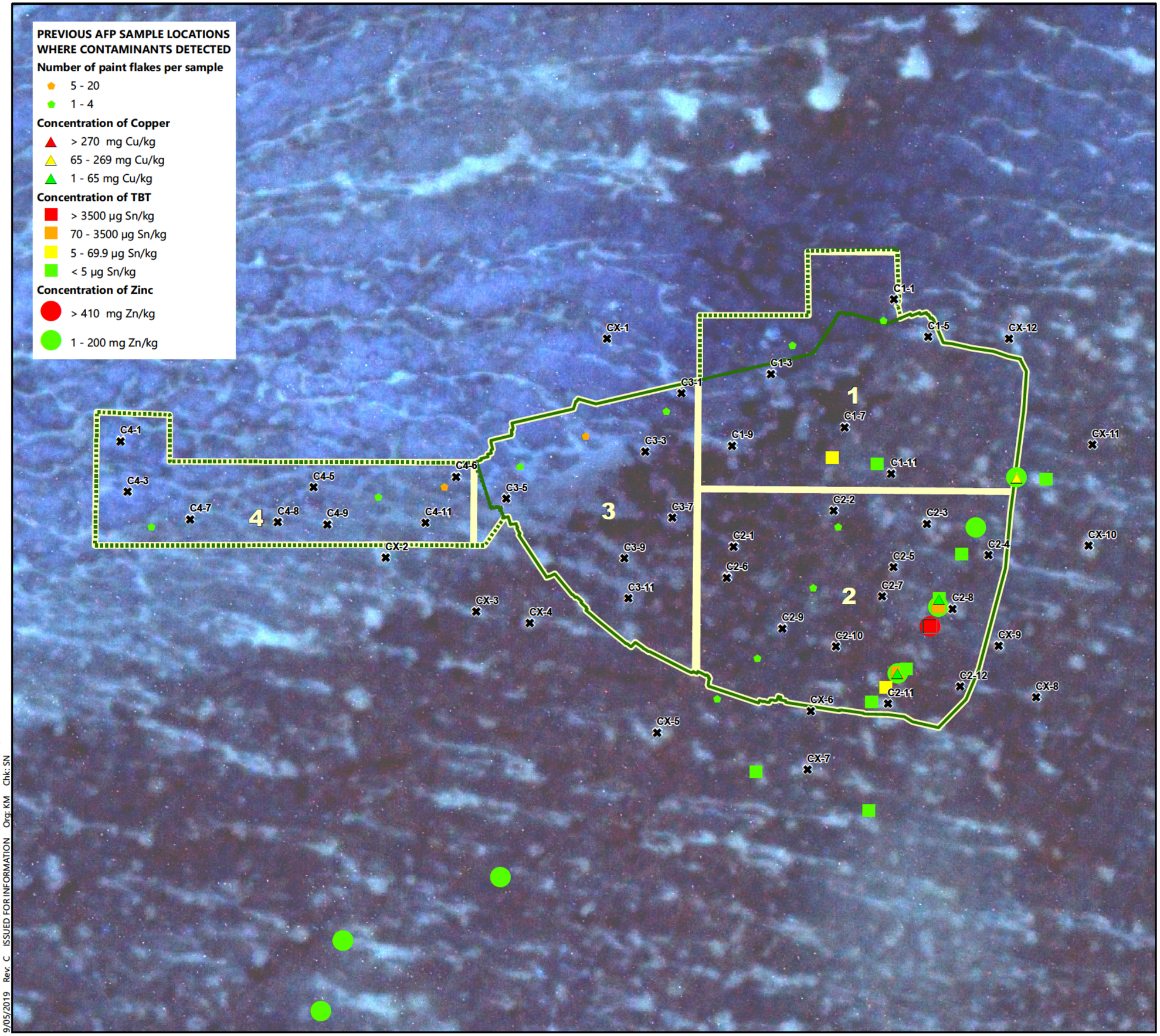
Douglas Shoal Remediation Planning
Sediment Field Report

Figure 2-16: Locations of sediment sampling sites in Priority Area C



Sediment sampling location

Priority area C

C

C - outside grounding

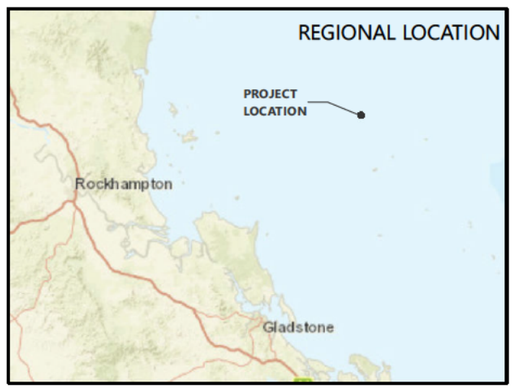
Source Information:
Grounding footprint, Priority areas
Cardno 2017
Previous AFP sampling
Costen et al 2017
Seafloor relectance imagery
EOMap 2019

Coordinate System: GCS GDA 1994
Datum: GDA 1994
Scale at A3 - 1:2,200

0 25 50 75 100
Metres

N

REGIONAL LOCATION



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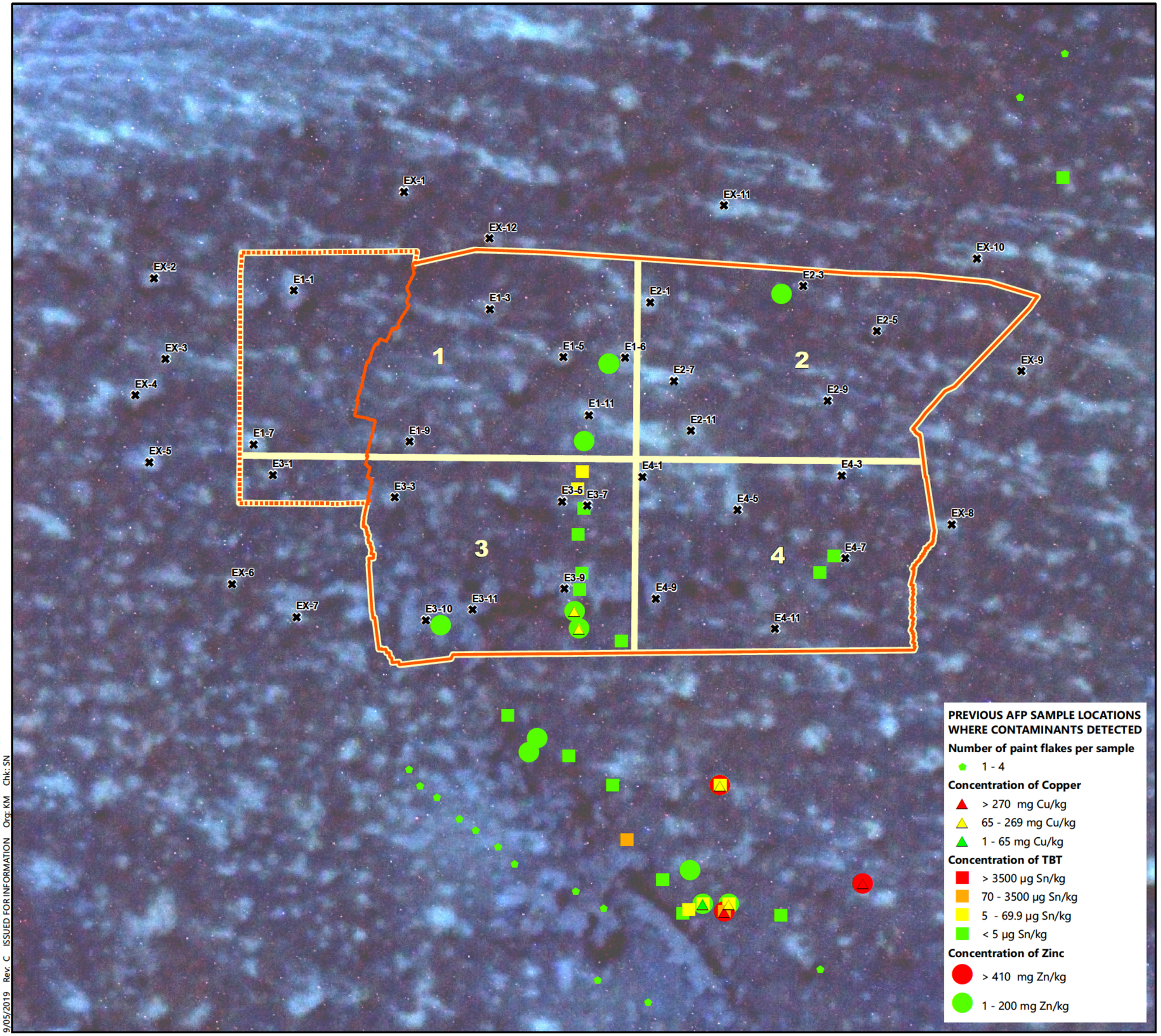
Sediment Field Report

Figure 2-17: Locations of sediment sampling sites in Priority Area E



Sediment sampling location

Priority area E sampling subarea

Priority Area

E

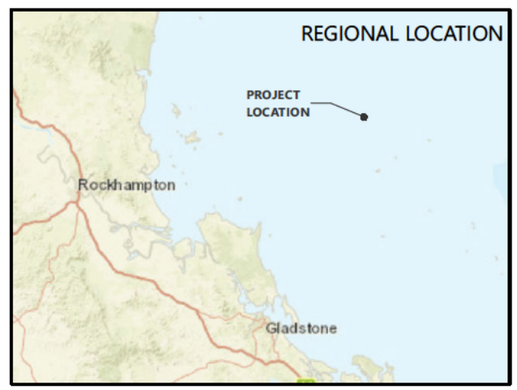
E - outside grounding footprint

Source Information:
Grounding footprint, Priority areas
Cardno 2017
Previous AFP sampling
Costen et al 2017
Seafloor relectance imagery
EOMap 2019

Coordinate System: GCS GDA 1994
Datum: GDA 1994
Scale at A3 - 1:2,000

0 25 50 75 100
Metres

N



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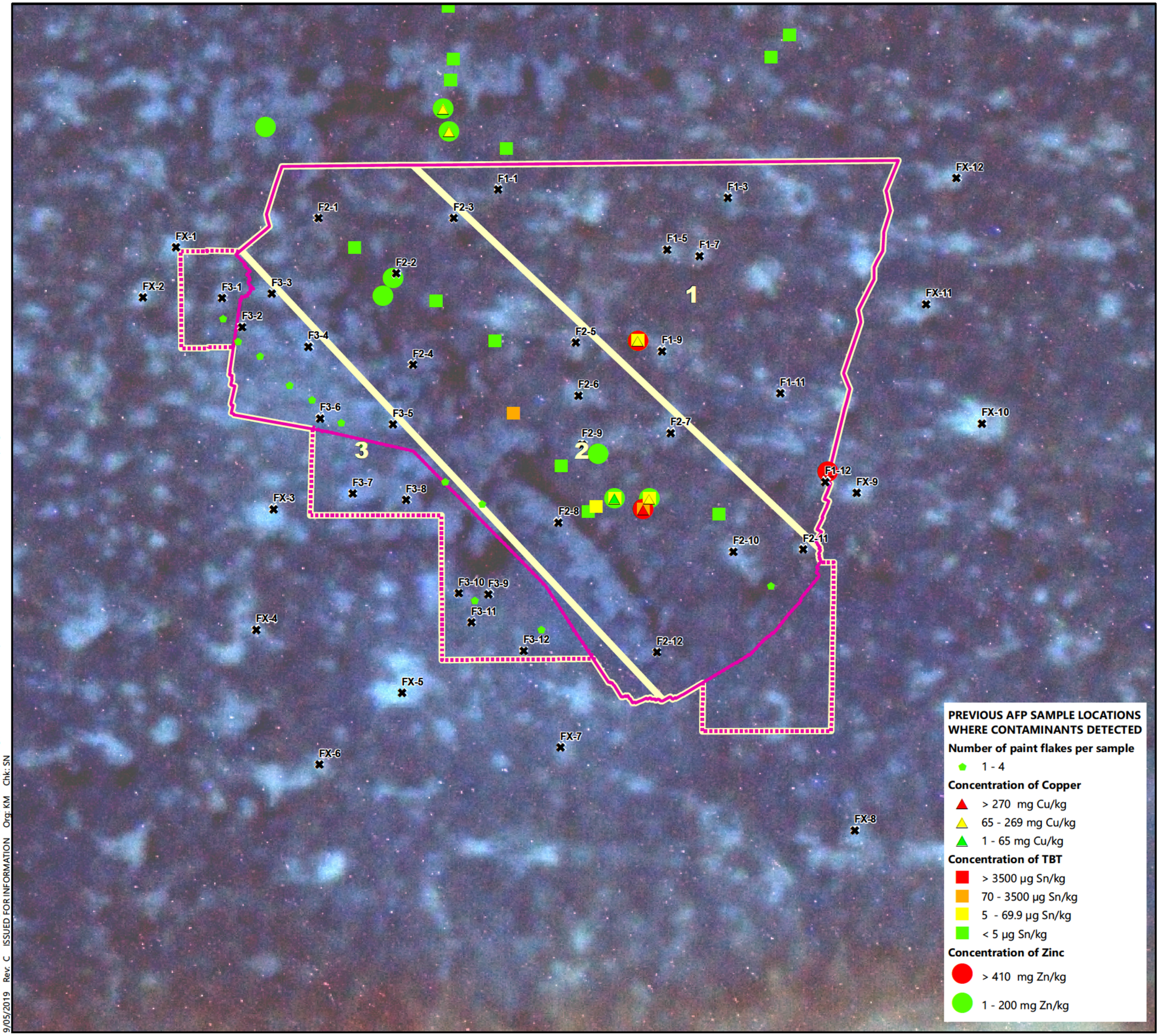
Douglas Shoal Remediation Planning
Sediment Field Report

Figure 2-18: Locations of sediment sampling sites in Priority Area F



Sediment sampling location

Priority area F

F

F - outside grounding

PREVIOUS AFP SAMPLE LOCATIONS WHERE CONTAMINANTS DETECTED

Number of paint flakes per sample

- 1 - 4

Concentration of Copper

- > 270 mg Cu/kg
- 65 - 269 mg Cu/kg
- 1 - 65 mg Cu/kg

Concentration of TBT

- > 3500 µg Sn/kg
- 70 - 3500 µg Sn/kg
- 5 - 69.9 µg Sn/kg
- < 5 µg Sn/kg

Concentration of Zinc

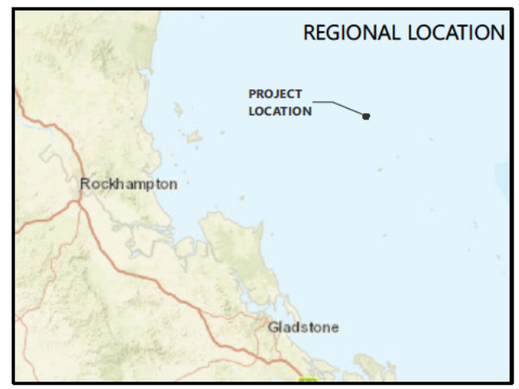
- > 410 mg Zn/kg
- 1 - 200 mg Zn/kg

Source Information:
Grounding footprint, Priority areas
Cardno 2017
Previous AFP sampling
Costen et al 2017
Seafloor relectance imagery
EOMap 2019

Coordinate System: GCS GDA 1994
Datum: GDA 1994
Scale at A3 - 1:1,500

0 20 40 60 80
Metres

N



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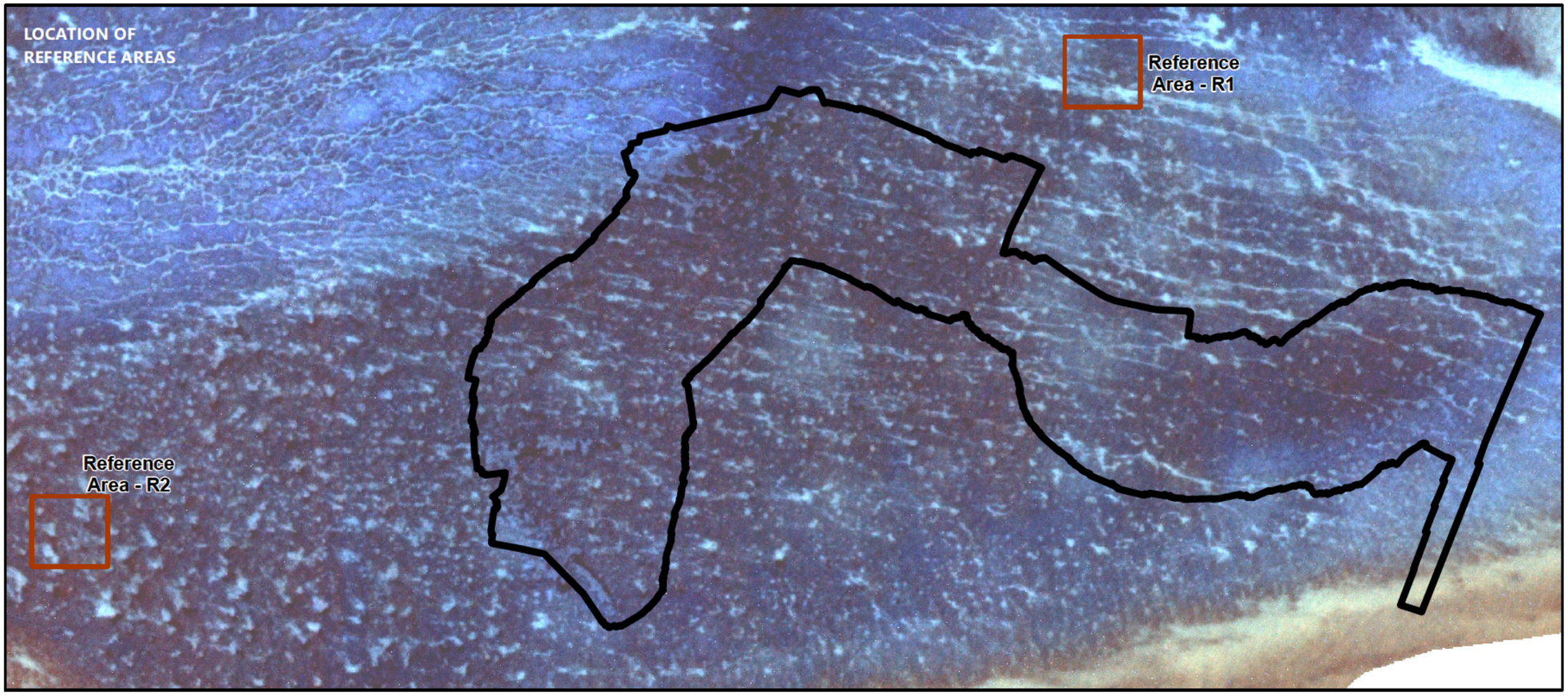
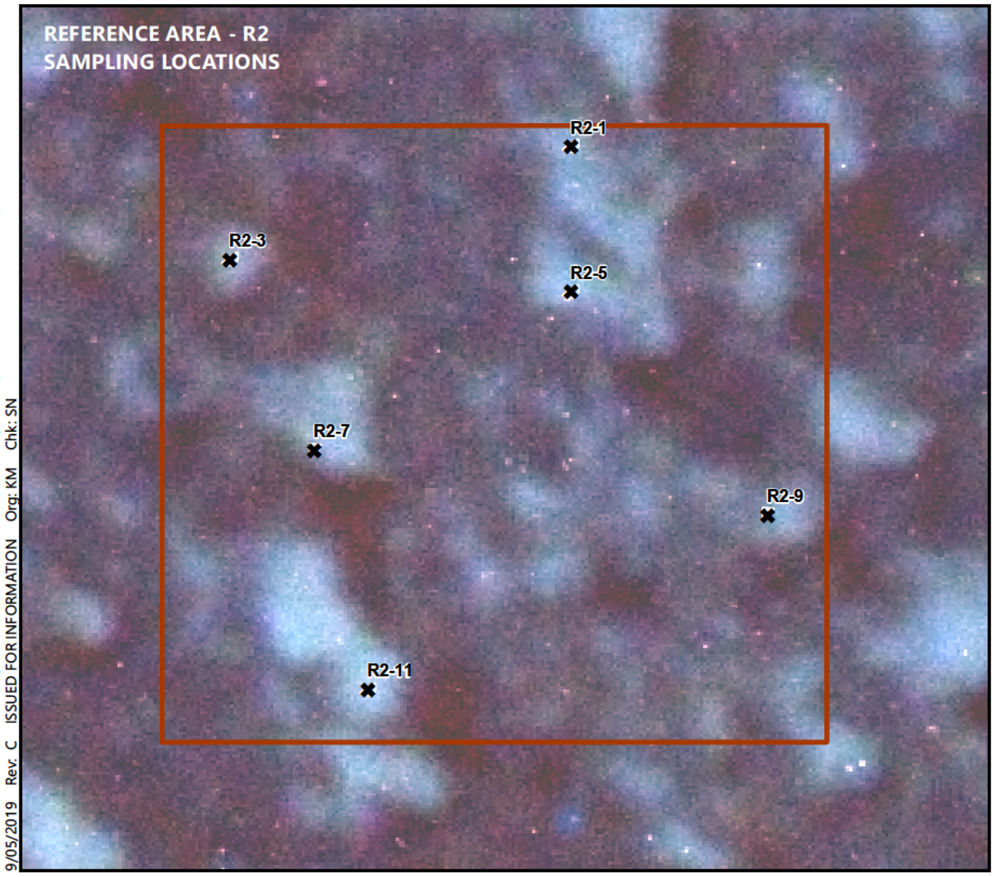
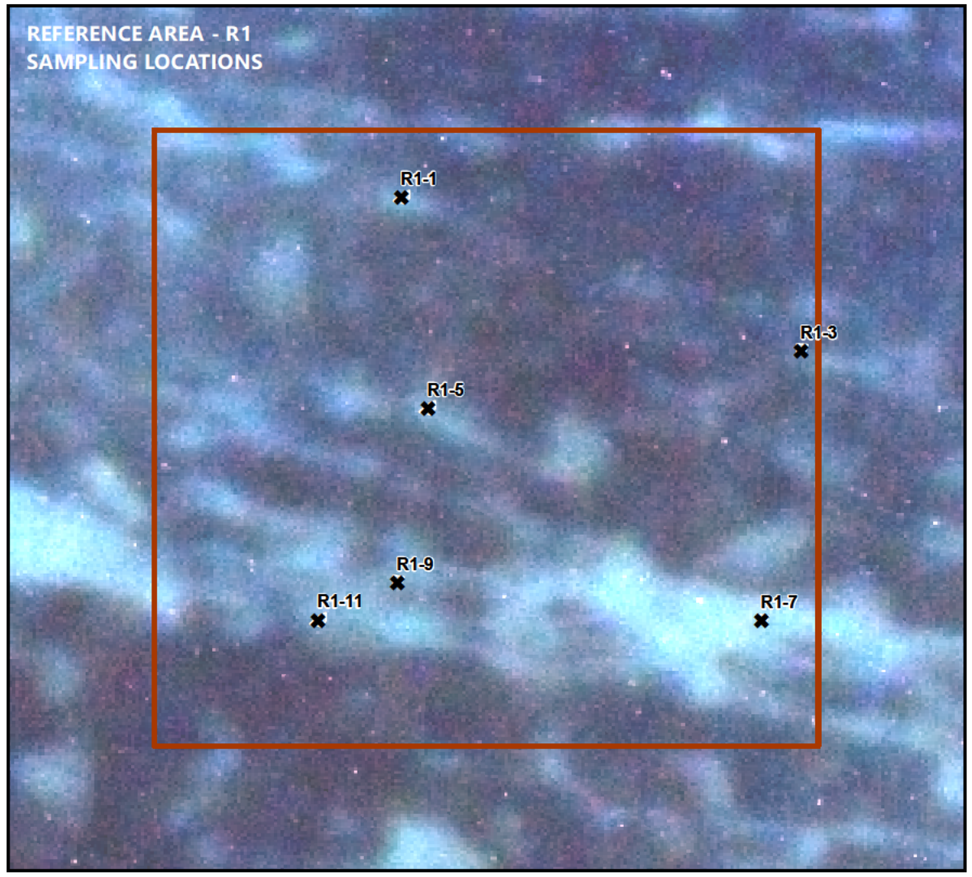
Douglas Shoal Remediation Planning
Sediment Field Report

Figure 2-19: Locations of sampling sites in the Reference Areas







✖ Sediment sampling location

Reference areas

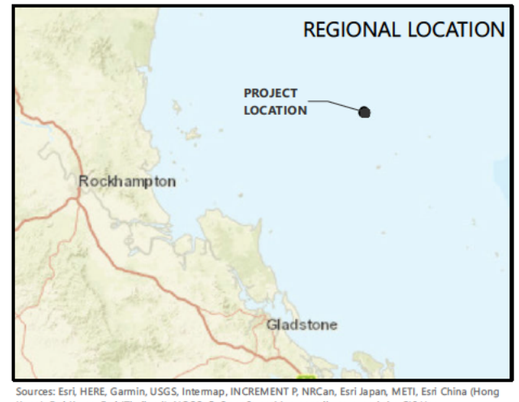
Grounding footprint

Source Information:
Grounding footprint, Priority areas
Cardno 2017
Seafloor relectance imagery
EOMap 2019

Coordinate System: GCS GDA 1994
Datum: GDA 1994
Scale at A3 - 1:7,000

0 50 100 150 200
Metres

N



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User

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2.4.2 Vessel tracks

During the 12 days of work at Douglas Shoal the work vessels covered approximately 100 kilometres per day each (a total of >1200km over 12 days) which included travelling to and from the shoal and manoeuvring to each site for diver drop off and pick up. An example of vessel tracks in Priority Area A is provided in Figure 2-20.

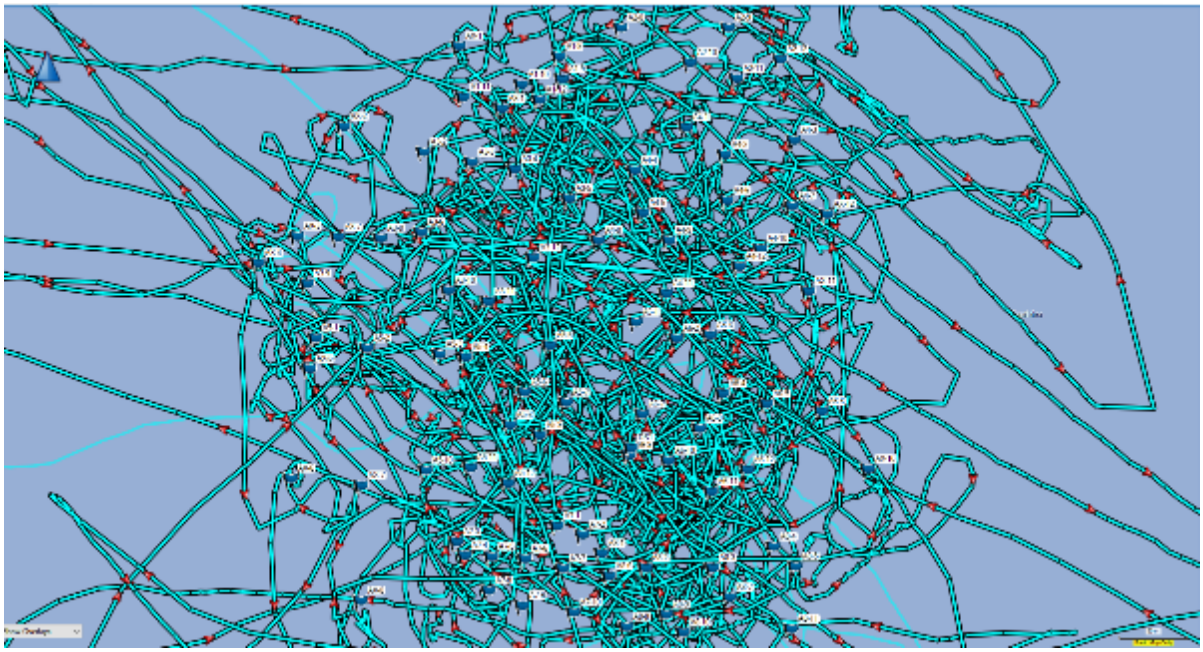

Figure 2-20 Example of the GPS tracks in Priority Area A for the Brynda

2.4.3 Depth of sediments

The method used to measure the depth of the sediments involved the diver hammering a scaled (5cm scale) stainless steel rod into the seafloor at five random locations within 10m of each sediment collection site (Figure 2-21).

Figure 2-21 Diver hammering in scaled stainless steel rod in Priority Area F to measure sediment depths

The depth of sediment at each of the sampling sites ranged from 5mm to 400mm, averaging 73mm across all sites (Table 2-7 and Figure 2-22). The areas AX and FX contained the deepest sediments, averaging 99.5mm and 114.8mm, respectively. The sampling sites in these areas were located outside of a priority area, and in some cases in deeper water. The sediment depths may be greater at these sites due to the lower energy environment found in the deeper water which may allow for more settlement.

Of the areas sampled, Priority Area A had the shallowest sediments. This may reflect the structure and location of the area. This site is the most uniform of the priority areas in terms of seafloor structure and is the most exposed of the priority areas in terms of prevailing winds and swell. This may cause resuspension of sediments rather than the accumulation at this location.

Table 2-7 Summary statistics for the depths of seafloor sediment measured by divers at each sampling site

Survey Area ID	Number of samples	Mean (mm)	Median (mm)	Minimum (mm)	Maximum (mm)	Standard Deviation	Standard Error
A	425	60.2	50	5	350	43.9	4.8
AX	60	99.5	100	20	200	49.1	14.2
C	165	76.2	50	5	400	72.3	12.6
CX	60	69.3	50	5	250	44.2	12.8

Survey Area ID	Number of samples	Mean (mm)	Median (mm)	Minimum (mm)	Maximum (mm)	Standard Deviation	Standard Error
E	130	65.3	50	5	350	37.2	7.3
EX	60	67.1	50	25	200	43.5	12.5
F	165	85.6	100	5	250	47.3	8.2
FX	60	114.8	100	20	300	48.1	13.9
Reference	60	78.1	75	10	150	38.1	11.0
Summary	1185	73.0	50	5	400	50.3	3.3

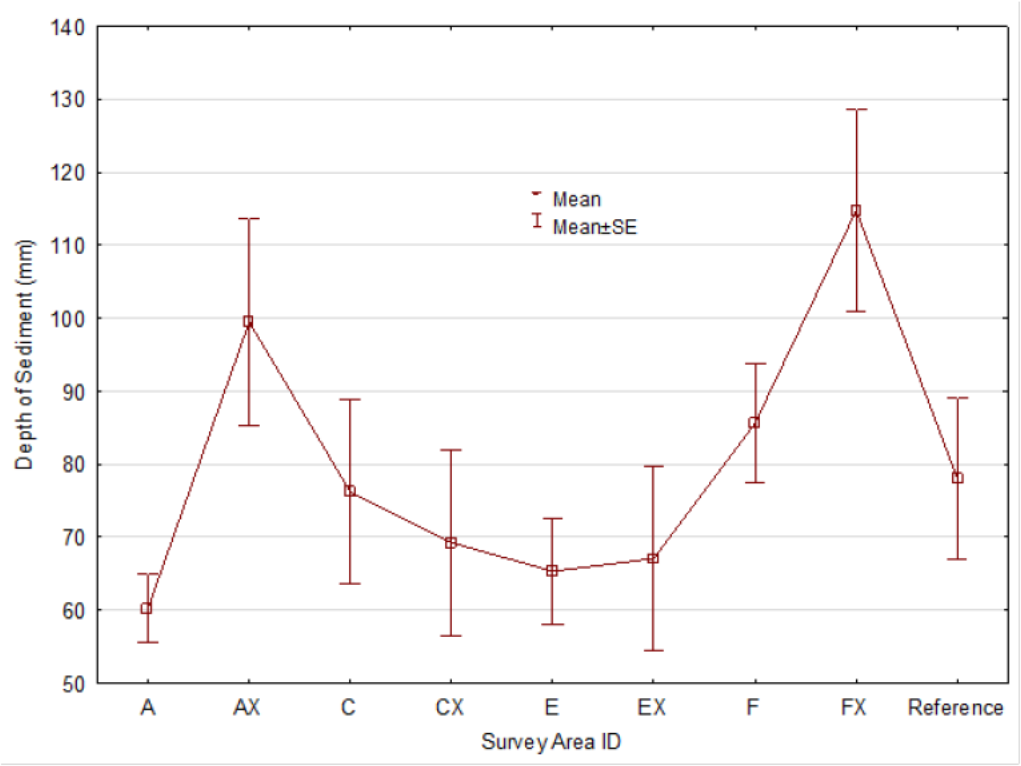

Figure 2-22 Graphical representation of the mean depths of sediments (mm) in each sampling area

2.4.4 Fauna

A cornucopia of protected fauna was observed during the 12 days spent at Douglas Shoal and in transit between Douglas Shoal and North West Island. Given the high abundance of fauna near the sea surface, vessel speeds when approaching, maneuvering on, and departing the shoal were lowered to reduce the risk of fauna strike.

Fauna observations were incidental, and fauna was not commonly identified to species level. A summary of the fauna observed during the fieldwork is provided in Table 2-8.

Table 2-8 Fauna observed at Douglas Shoal and surrounds

Fauna	EPBC Act* Status	Number Observed	Activity
Green Turtle *(Chelonia mydas)*	Vulnerable	24	Basking on the surface or swimming
Olive Sea Snake *(Aipysurus laevis)*	Listed	22	On surface
Other sea snakes (Banded Sea Snake etc.)	Listed	5	On surface
Tiger Shark *(Galeocerdo cuvier)*	Not listed	2	Swimming at Douglas Shoal
Tawny Nurse Sharks *(Nebrius ferrugineus)*	Not listed	7	Swimming at Douglas Shoal
Bottlenose Dolphin, Common Dolphin	Listed	20+	Bow riding or feeding - spotted while transiting between North West Island and Douglas Shoal

**Environment Protection and Biodiversity Conservation Act 1999*

2.4.5 Human visitation

During the 12 days on site at Douglas Shoal 13 vessels were sighted within 2km of the diving operations. Many of the vessels were less than 10m in length and were either drift fishing or spearfishing. The weather during this period was exceptional – predominately 10kts wind and less than 0.5m (Figure 2-23) swell which meant the 40-60km distance from the mainland to the Shoal was easily traversed by most vessels. No low-level aircraft were observed flying over the shoal.

2.4.6 Tides and currents

The start of the field trip was planned such that most of the sediment collection would occur during the neap tidal cycle to minimise exposure of the divers to high currents and deeper water. This allowed for diving to continue across the entire tidal cycle with a short 1-1.5-hour break during the principal water level change (high current period), 1-2 hours after the high or low tide.

The last two days of the field trip coincided with the start of the spring tidal cycle. This required that diving activities be suspended for several hours in the periods during the largest change in water levels (i.e. approximately one hour after the change in the tide) due to high currents. This period coincided with high tides in the morning and low tides in the afternoon which also limited the amount of daylight hours available during the slack of the tides to undertake sediment collection.

Figure 2-23 Calm weather on Day 13 of the field trip

2.4.7 Evidence of natural recovery

Divers observed evidence of the ship grounding, noting large areas of exposed bare substrate that were covered in a fine layer of sand and angular rubble, or areas of large angular rubble overlaid on solid substrate. No evidence of ship hull fragments or AFP flakes were observed by divers.

An example of the angular rubble found at the initial grounding sites in Priority Area A is provided in Figure 2-24, which is typical of the rubble found in the grounding areas.

Examples of bare substrate sparsely covered or fully covered by large angular rubble patches were observed in all priority areas:

- At site F2-8 in Priority Area F where the Sheng Neng sat on the Shoal for approximately six days (Figure 2-25) a large expanse of rubble, bare of any re-growth of benthic organisms extends for over 100m and is approximately 25m at its widest
- At site C3-3 in Priority Area C where the Sheng Neng was pushed up onto the shallow section of the Shoal (Figure 2-26), very little regrowth was observable.

In both areas there was sparse growth of macro algae (*Sargassum spp.*) only on the edges of the rubble and coarse sand patches.

Figure 2-24 Sediment collected from Site A6-2 in Priority Area A (sampling tube (left) mixing bowl (right))

Figure 2-25 Image of the seafloor in Priority Area F (site F2-8)

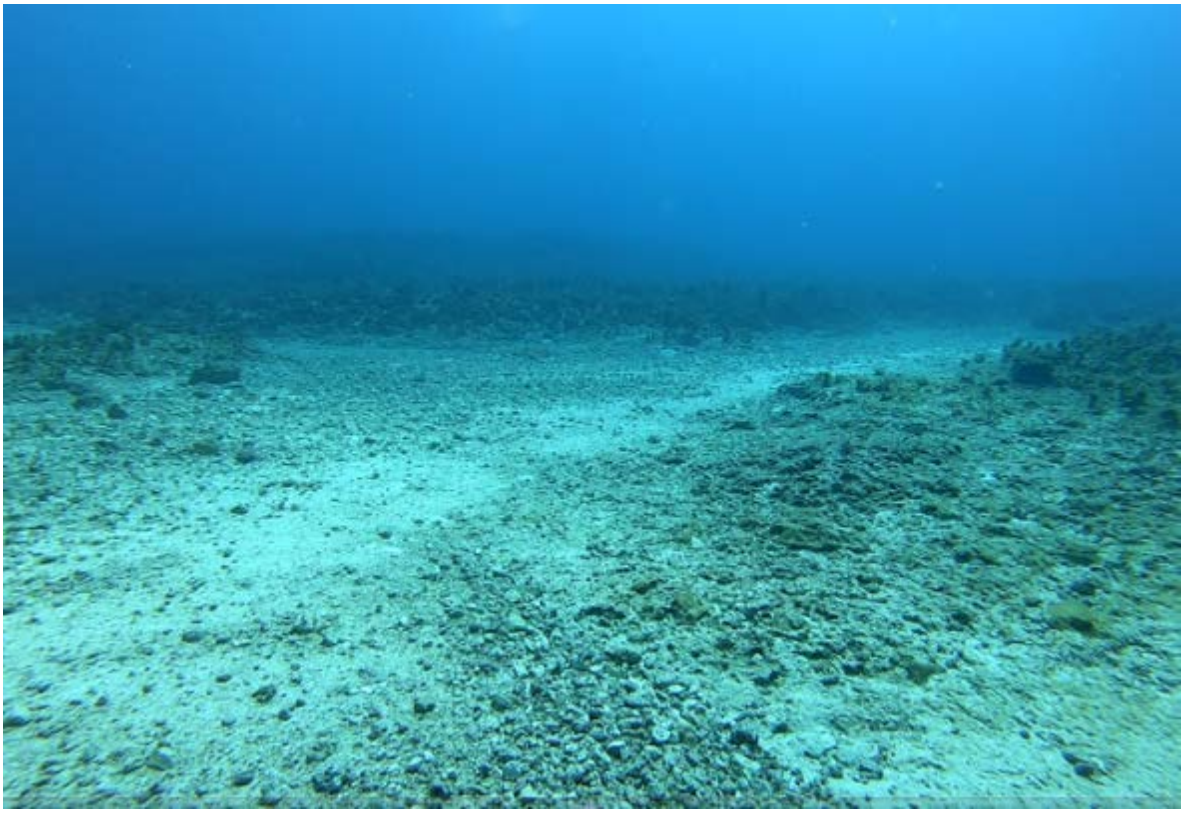

Figure 2-26 Image of the seafloor in Priority Area C (site C3-3)

Divers reported (and underwater panoramas confirmed) that some areas appear to have 'unnatural' scars or gutters e.g. at site A3-3 in priority area A (Figure 2-27) or in the Reference Area – site R1-1 (Figure 2-28). Many of these areas are outside of the physical impact zone as described in Negri *et al*, 2010 – *Grounding of the Shen Neng1 on Douglas Shoal: Multibeam Sonar Bathymetry and Towed Video Assessments*. This implies that in some unimpacted parts of the shoal areas of bare substrate and large flat featureless expanses exist. Divers noted (and videos confirmed) that macroalgae appears to grow in the middle of the sediment patches, not just on the edges as noted within some impacted areas (refer to Figure 2-28).

Figure 2-27 Channel of 'unnatural' appearance, Area A (Site A3-3), outside areas of physical damage per AIMS (2010)

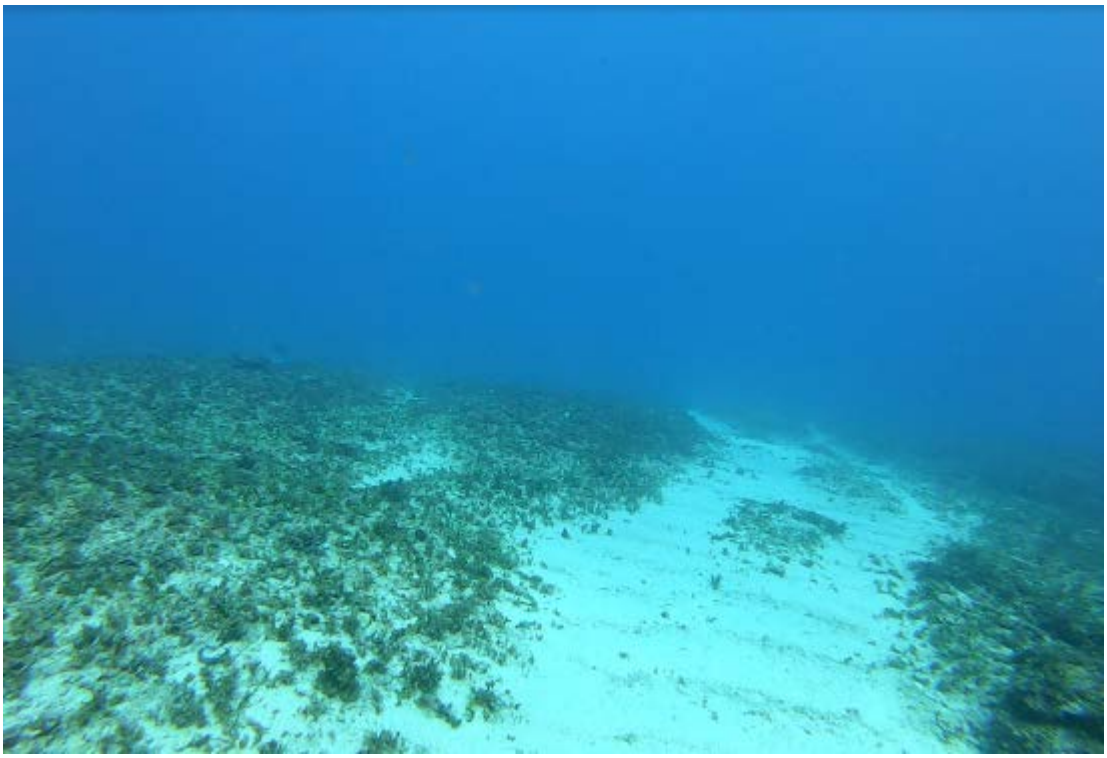

Figure 2-28 Channel of 'unnatural' appearance in the Reference Area (site R1-1)

2.4.8 Macroalgae

The macroalgae *Sargassum spp.* was found growing prolifically on the shoal, covering areas of consolidated sediment and rock in stands up to 1.5m high in places (Figure 2-29). The algae tended to be sparser in Priority Area A where the substrate is very uniform and more exposed to wave, and wind driven wave conditions (Figure 2-30).

Figure 2-29 View of the typical algal community at Site F2-9 in Priority Area F

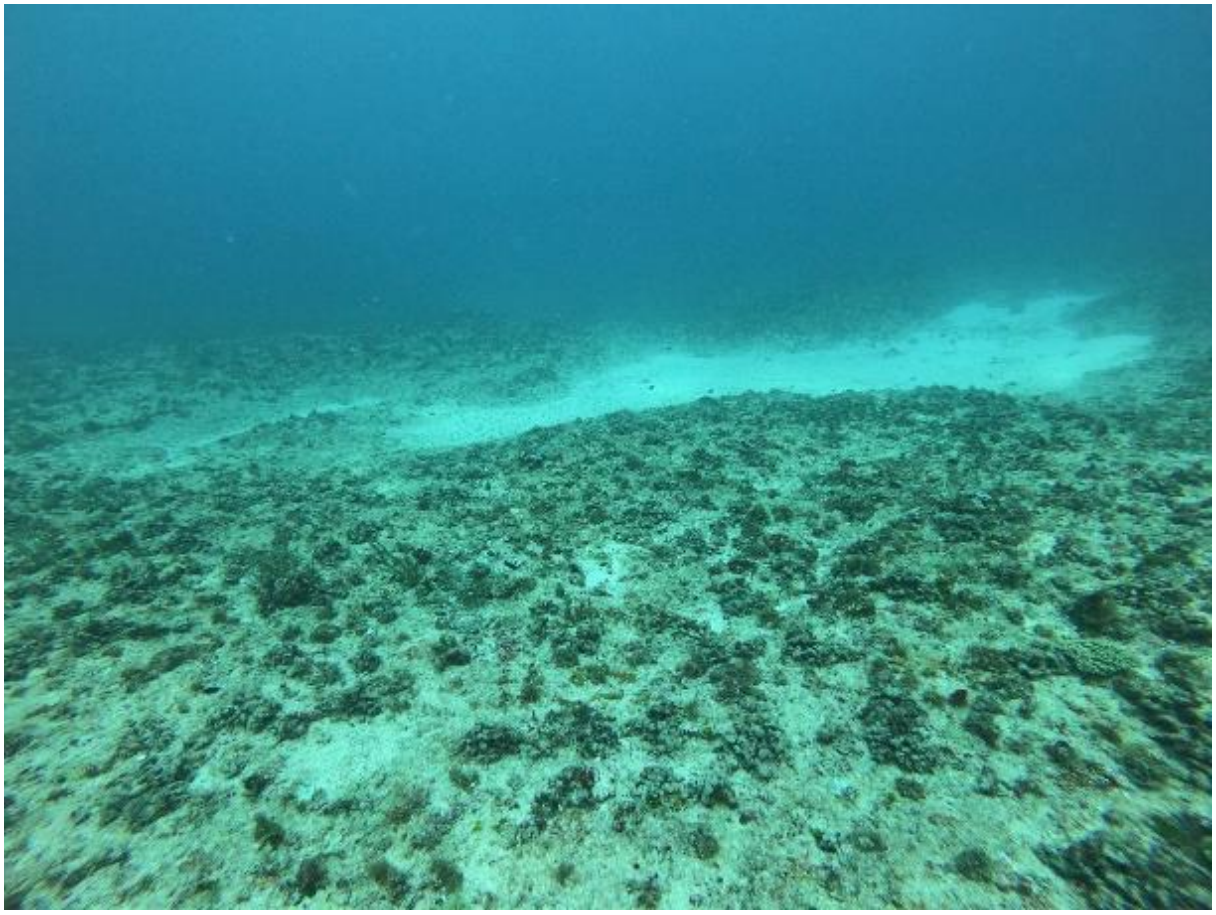

Figure 2-30 View of the typical algal community at Site A5-12 in Priority Area A

3 Lessons learned

The fieldwork provided the opportunity to gain valuable knowledge regarding conditions at Douglas Shoal that are likely to be relevant to future activity for the remediation project. A summary of these is provided in Table 3-1 as 'lessons learned'. Relevant HSE incidents are reported separately through project management reporting.

Table 3-1 Fieldwork lessons learned

Challenge	Issue	Solution
Voice communications	Intermittent and unreliable mobile phone coverage when at North West Island and Douglas Shoal. Vessel to vessel radio contact is intermittent between Douglas Shoal and North West Island.	Mobile phones should utilise the Telstra network which has coverage as far as North West Island but not at Douglas Shoal. Satellite phones used for communications between the team and office. Where work teams are separated, satellite phone should be carried on the separated vessels to enable communication in emergency situations. Future stages of the Project may consider sourcing technology to boost the network signal.
Email access	No access available without network stability.	Future stages of the Project may consider sourcing technology to boost the network signal.
Diverse team of subcontractors	Communication breakdown between teams.	Ensure clear lines of communications are established prior to mobilisation and re-iterated during pre-start meetings especially during periods of rapid scope changes.
Open nature of Douglas Shoal	Activities at the Shoal are impacted upon by wind, waves and currents during most of the year, causing delays in mobilisations.	Consideration of more infrastructure installed on/near the Shoal during extended work periods (Stream 2) such as moorings.
Equipment and personnel transfer between vessels while at Douglas Shoal	Due to the lack of protection from weather and sea conditions at the shoal, transfers carry HSE and equipment loss risk.	Avoid, or if not possible to avoid, minimize the transfer of equipment and personnel at Douglas Shoal. If conditions are appropriate, in water transfer at Douglas Shoal is preferable.

Challenge	Issue	Solution
		Undertake transfers at sound mooring or anchorage locations (such as at North West Island). For future stages of the remediation project and dependent on remediation activity, consider installation of dedicated moorings at Douglas Shoal to provide for vessel stability when transfers occur.
Anchoring on Douglas Shoal	Anchoring was not possible for the fieldwork vessel configurations due to very loose substrate and large areas of smooth rock which did not provide adequate anchoring points.	Fieldwork activities utilise 'live' boating techniques unless in low current (turn of the tide or neap tides) and low wind and swell conditions. For future stages of the remediation project and dependent on remediation activity, consider installation of dedicated moorings at Douglas Shoal to allow for periods of down time and reduce fuel use.
Vessel anchoring and mooring arrangements at adjacent areas	Vessels anchoring and mooring arrangements at North West Island carry HSE and equipment loss risk through vessel interactions with each other and/or fringing reef, particularly during periods where weather and sea conditions change rapidly.	Use existing moorings at North West Island where available and appropriate to do so with consideration given to (amongst other things) vessel collision. For future stages of the remediation project and dependent on remediation activity, consider installation of dedicated moorings at multiple locations at North West Island to provide appropriate, available mooring options.
Sample storage and transfer to Gladstone via Heron Island	Inadequate sample storage facilities (freezers and fridges) on vessels may mean that sample holding times are exceeded. The Heron Island Ferry does not run every day and the timetable changes between seasons. There is some difficulty in communicating with Heron Island regarding sample transfers.	For large sampling programs, ensure that large storage facilities (freezers and fridges) are available. Communications solutions noted above.

Challenge	Issue	Solution
Sample transfer to Gladstone via Heron Island	Sample transfer is not available by ferry on weekends and noting typical laboratory closure on weekends, some risk exists that sample holding times will be exceeded.	Scheduling of activity to ensure that samples are transferred to Gladstone on weekdays and that samples are kept frozen. Organise alternative transport to Gladstone.
Large distance from Douglas Shoal to the mainland	Transfers removes one vessel from work operations, thereby reducing sampling efficiency and requiring use of fuel reserves.	Utilise existing services such as the Heron Island ferry where available to reduce transfer time. Schedule activity such that personnel transfer requirements are minimised.
Abundant fauna	Interactions with fauna carry HSE risk.	Limit vessel speeds in sensitive locations. Ensure protocols for interactions with fauna are communicated and adhered too. For example, the wearing of shark shields on all divers to limit interactions and protocols to manage shark sightings such as halting work and shifting locations.

4 Preliminary findings

- The sediment sampling completed across the full extent of the priority remediation areas will support a robust assessment of the current state of the shoal with respect sediment conditions, including particularly sediment depth, particle size and contamination, noting that this will be further supported by the visual assessment works.
- In conjunction with visual assessment works it is likely that priority remediation areas may be further delineated using the sediment fieldwork information.
- It appears that evidence of the impact of the grounding still exist at Douglas Shoal with consideration of the correlation between areas traversed by the Sheng Neng 1 and areas that appear (based on the fieldwork) to be affected:
  - Preliminary results indicate that TBT exists in sediments at levels above relevant guidelines, mostly confined to distinct subareas within Priority Area A (i.e. where the ship initially hit the shoal) noting that this will be confirmed through ongoing analysis
  - There appears to be a difference in sediment type for affected areas (more angular rubble compared to course sand and cobbles), noting that this may be further supported through laboratory analysis and the visual assessment.
- Fieldwork identified that Douglas Shoal incorporates large flat areas that are relatively featureless and 'unnatural' scars or gutters occur both within and outside of the priority remediation areas. Given that there is no baseline condition assessment (prior to the grounding) for Douglas Shoal, this may implicate some challenges for the delineation of impacted areas both spatially and in terms of relative importance, noting that the visual assessment may support this consideration.
- Although there was variation across Douglas Shoal, the depth of sediment was generally limited. While the understanding of sediment depth may be further supported by visual assessment work, given the fieldwork information and dependent on remediation techniques, it is unlikely that vertical distribution of contaminants in sediment in priority areas will be of high relevance.
- Douglas Shoal is a relatively unprotected environment for fieldwork with changeable weather, sea conditions and an abundance of fauna. The shoal is commonly affected by both significant weather systems (such as cyclones) and local rapidly changing conditions. As these elements cannot be avoided, they need be managed through a balance of minimisation of exposure and careful planning for work (including for emergency situations) and particularly with consideration of vessel interactions and HSE risk.

5 References

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Appendix A
Site specific sediment sampling information

Advisian

Abbreviations
Sample Collector: [redacted]
Sample Processor: [redacted]
Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H
Current state: Nil - N, Low - L, Medium -M, Strong – S
Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Publication note: Personal names removed

Sediment Collection Details Database

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	F	**F2-8**	2	8/3/19 1050	[redacted]	[redacted]	D	M	15	14	R/CS (<5%)	N	N	N	Y	20	20	20	30	40						No USBL fix		151 38.932	23 6.088
2	F	**F2-12**	2	8/3/19 1125	[redacted]	[redacted]	D	M	15	14	CS/R	N	N	N	Y	60	40	20	20	30						No USBL fix		151 38.954	23 6.117
3	F	**F2-11**	2	8/3/19 1149	[redacted]	[redacted]	D	M	15	14	CS/R (small) (<5%)	N	N	N	Y	120	80	50	50	40						No USBL fix		151 38.987	23 6.094
4	F	**F2-10**	2	8/3/19 1215	[redacted]	[redacted]	D	M/S	15	14	CS/R (<5%)	N	N	N	Y	10	10	10	60	30						No USBL fix		151 38.971	23 6.094
5	F	**F2-9**	2	8/3/19 1300	[redacted]	[redacted]	D	M	15	14	CS/R (<10%)	N	N	N	Y (Photo pan)	10	10	10	10	15						No USBL fix		151 38.937	23 6.070
6	F	**F2-7**	2	8/3/19 1326	[redacted]	[redacted]	D	M	15	14	CS/R (<10%)	N	N	N	Y	10	15	20	20	20						No USBL fix		151 38.957	23 6.067
7	F	**F2-1**	2	8/3/19 1400	[redacted]	[redacted]	D	M/L	15	14	CS/R <10%)	N	N	N	Y	20	20	20	40	10						No USBL fix	Rain	151 38.878	23 6.019
8	F	**F2-6**	2	8/3/19 1415	[redacted]	[redacted]	D	M/L	15	14	CS/R	N	N	N	Y	100	100	150	150	150						No USBL fix		151 38.937	23 6.059
9	F	**F2-2**	2	8/3/19 1430	[redacted]	[redacted]	D	L/Surge	15	14.2	R/CS	N	N	N	Y	50	50	100	100	100						No USBL fix		151 38.896	23 6.031
10	F	**F2-5**	2	8/3/19 1500	[redacted]	[redacted]	D	L/Surge	15	14	CS/R (<5%)	N	N	N	Y	150	200	200	200	200						No USBL fix		151 38.936	23 6.047
11	F	**F2-3**	2	8/3/19 1510	[redacted]	[redacted]	S	L/Surge	15	13	CS/R	Y	N	N	Y	100	20	30	150	200						No USBL fix		151 38.908	23 6.019
12	F	**F2-4**	2	8/3/19 1520	[redacted]	[redacted]	S	N/Surge	15	13	CS/R	N	N	N	Y	100	50	20	100	150						No USBL fix		151 38.899	23 6.052
13	C	**C2-1**	3	9/3/19 0920	[redacted]	[redacted]	S/H	L	15	15	R/CS (<5%)	N	N	N	Y	50	50	50	50	50						No USBL fix due to Thru Water Coms interference Large rubble bank - broken coral, small amounts of CS	Wind 10-15 knots, gusting to 15-20 knots Sea 1-1.5m	151 39.045	23 5.790
14	C	**C2-8**	3	9/3/19 0940	[redacted]	[redacted]	S/H	L/Surge	15	16	CS/R (<1%)	N	N	N	Y	45	40	50	45	40						No USBL fix due to Thru Water Coms		151 39.118	23 5.810

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
																										interference Down in hole			
15	C	**C2-6**	3	9/3/19 1000	[redacted]	[redacted]	H	Surge	15	16	R (large)/CS (<5%)	N	N	N	Y	10	10	10	10	10						No USBL fix due to Thru Water Coms interference. Then divers mask changed and interference reduced		151 39.043	23 5.800
16	C	**C2-12**	3	9/3/19 1015	[redacted]	[redacted]	H	L/Surge	15	16	CS/R (<5%)	N	N	N	Y	30	30	40	10	10						USBL saved		151 39.1103	23 05.8272
17	C	**C2-2**	3	9/3/19 1045	[redacted]	[redacted]	H	L/Surge	-	16	CS/R (15%)	N	N	N	Y	100	50	25	50	25						USBL saved		151 39.0769	23 05.7776
18	C	**C2-11**	3	9/3/19 1057	[redacted]	[redacted]	H	L/Surge	15	16	-	N	N	N	Y	100	100	100	50	50								151 39.0975	23 05.8382
19	C	**C2-3**	3	9/3/19 1110	[redacted]	[redacted]	D	L/Surge	15	16	-	N	N	N	Y	100	100	100	50	50								151 39.1114	23 05.7870
20	C	**C2-10**	3	9/3/19 1120	[redacted]	[redacted]	D	L	15	16	CS/R (<5%)	N	N	N	Y	50	50	50	75	100								151 39.0782	23 05.8244
21	C	**C2-4**	3	9/3/19 1155	[redacted]	[redacted]	D	L	15	15.3	-	N	N	N	Y	50	50	50	25	25								151 39.1314	23 05.7970
22	C	**C2-9**	3	9/3/19 1205	[redacted]	[redacted]	D	L	15	15	-	N	N	N	Y	25	25	25	25	25								151 39.1033	23 05.8062
23	C	**C2-5**	3	9/3/19 1216	[redacted]	[redacted]	D	L	15	15	CS/R (10%)	N	N	N	Y	50	25	100	5	5								151 39.1009	23 05.8011
24	C	**C2-7**	3	9/3/19 1240	[redacted]	[redacted]	D	M/Surge	15	15.7	-	N	N	N	-	25	25	25	50	50								151 39.1021	23 05.8070
25	E	**E4-1**	3	9/3/19 1315	[redacted]	[redacted]	D	M	15	15	CS/R (<1%)	N	N	N	Y	5	5	5	5	5						Booby on boat	Wind 10-15 knots east Sea 1m	151 38.9308	23 05.9577
26	E	**E4-7**	3	9/3/19 1340	[redacted]	[redacted]	D	M/S	15	14	CS	N	N	N	Y	20	20	20	50	100								151 38.9993	23 05.9861
27	E	**E4-3**	3	9/3/19 1400	[redacted]	[redacted]	D	M/S	15	13.7	-	N	N	N	Y	20	20	20	20	20								151 38.9956	23 05.9567
28	E	**E4-5**	3	9/3/19 1425	[redacted]	[redacted]	D	M/S	15	14	R/CS (<5%)	N	N	N	Y	50	50	50	50	50				1		Shark 2m away (filmed and confirmed)		151 38.9652	23 05.9682

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
29	E	**E4-11**	3	9/3/19 1445	[redacted]	[redacted]	D	M	15	14	CS	N	N	N	Y	40	40	40	50	50								151 38.9779	23 05.0027
30	E	**E4-9**	3	9/3/19 1455	[redacted]	[redacted]	D	M/S	15	14.3	R/CS (<5%)	N	N	N	Y	25	25	25	25	25								151 38.9305	23 05.9929
31	A	**A6-1**	3	10/3/19 0830	[redacted]	[redacted]	R	L	20+	13.2	R/CS (<10%)	N	N	N	Y	50	50	50	50	50		1						151 39.5608	23 05.9529
32	A	**A6-12**	4	10/3/19 0850	[redacted]	[redacted]	R	L	20+	16.5	CS/R (<10%)	N	N	N	Y	100	50	50	50	50								151 39.6141	23 06.0201
33	A	**A6-2**	4	10/3/19 0910	[redacted]	[redacted]	R	M	20+	13.3	R	N	N	N	Y	75	75	75	75	100					1 (fishing vessel?)	Vessel about 8m long		151 39.5847	23 05.9624
34	A	**A6-11**	4	10/3/19 0920	[redacted]	[redacted]	R	M	20+	15	CS/R (<1%)	N	N	N	Y (No GoPro)	50	100	50	75	20						No GoPro		151 39.6064	23 06.0214
35	A	**A6-3**	4	10/3/19 0930	[redacted]	[redacted]	R	M	20	15	R/CS (<10%)	N	N	N	Y	75	80	80	80	80						C ient sample collected		151 39.6067	23 05.9611
36	A	**A6-6**	4	10/3/19 0950	[redacted]	[redacted]	R	M	20+	15	CS/R (<1%)	N	N	N	Y	50	50	50	50	100						C ient sample collected		151 39.6617	23 05.9894
37	A	**A6-7**	4	10/3/19 1000	[redacted]	[redacted]	R	M	20+	15.2	CS	N	N	N	Y	50	60	80	80	80								151 39.5757	23 05.9903
38	A	**A6-5**	4	10/3/19 1010	[redacted]	[redacted]	R	M	20	15	CS	N	N	N	Y	50	50	50	50	50								151 39.6923	23 05.6569
39	A	**A6-8**	4	10/3/19 1035	[redacted]	[redacted]	R	M/L	20	15.7	R/CS (<10%)	N	N	N	Y	50	50	50	20	20								151 39.6047	23 06.0007
40	A	**A6-10**	4	10/3/19 1040	[redacted]	[redacted]	R	L	20	15	CS (50%) / R (50%)	N	N	N	Y	25	25	25	25	25								151 39.5918	23 06.0088
41	A	**A6-4 (T1)**	4	10/3/19 1120	[redacted]	[redacted]	H	L	25+	15	CS	N	N	N	Y (No GoPro)	30	30	30	30	30						No GoPro Triplicate sample (T1/T2/T3)		151 39.6188	23 05.9852
42		**A6-4 (T2)**	4	10/3/19 1120	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						No GoPro Triplicate sample (T1/T2/T3)		151 39.6188	23 05.9852
43		**A6-4 (T3)**	4	10/3/19 1120	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						No GoPro Triplicate sample (T1/T2/T3)		151 39.6188	23 05.9852
44	A	**A6-9**	4	10/3/19 1125	[redacted]	[redacted]	H	L	25+	15	CS/R	N	N	N	Y	50	50	50	50	50								151 39.5718	23 06.0083

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
45	A	**A8-1**	4	10/3/19 1135	[redacted]	[redacted]	H	L	25	15.2	CS	N	N	N	Y	50	75	50	25	50						PSD and settleabi ty		151 39.5609	23 06.0541
46	A	**A8-5**	4	10/3/19 1145	[redacted]	[redacted]	H	N	25+	19	FS/CS	N	N	N	y	5	50	75	50	5						C ient sample		151 39.6593	23 06.0576
47	A	**A3-1**	4	10/3/19 1245	[redacted]	[redacted]	D	M/S	20	15	FS/CS	N	N	N	Y	20	20	20	20	20						PSD and settleabi ty No USBL fix due to Thru Water Coms interference On mark of DGPS		151 39.512	23 5.872
48	A	**A3-7**	4	10/3/19 1255	[redacted]	[redacted]	D	M/S	20+	15.7	CS	N	N	N	Y	100	20	20	20	20						USBL fix		151 39.4455	23 05.9148
49	A	**A3-5**	4	10/3/19 1315	[redacted]	[redacted]	D	M/S	20+	16.7	CS	N	N	N	Y	25	25	25	25	-								151 39.5488	23 05.9113
50	A	**A3-3**	4	10/3/19 1330	[redacted]	[redacted]	D	M/S	25	15.9	CS	N	N	N	Y	25	25	25	25	25						Dup icate samples (D1/D2)		151 39.5041	23 05.8950
51	A	**D1**	4	10/3/19 1330	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D1/D2)		151 39.5041	23 05.8950
52	A	**D2**	4	10/3/19 1330	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D1/D2)		151 39.5041	23 05.8950
53	E	**E3-1**	5	11/3/19 0835	[redacted]	[redacted]	R	L	25+	14.8	CS/R (small)	Y	N	N	Y	75	100	100	100	50						Rubble covered in CA		151 38.8092	23 05.9552
54	E	**E3-5**	5	11/3/19 0855	[redacted]	[redacted]	R	L	-	14.5	S/CS/R (small)	Y	N	N	Y	100	100	100	50	50						Rubble covered in CA C ient sample		151 38.8927	23 05.9639
55	E	**E3-3**	5	11/3/19 0900	[redacted]	[redacted]	R	L	25+	14.9	CS/R (small)	Y	N	N	Y	25	50	50	50	100						Rubble covered in CA C ient sample		151 38.8418	23 05.9597
56	E	**E3-9**	5	11/3/19 0910	[redacted]	[redacted]	R	L	25	15.3	R	N	N	N	Y	50	50	50	100	200						Grounding type rubble From big expanse of rubble - ground zero?		151 38.8973	23 05.9884
57	E	**E3-11**	5	11/3/19 0920	[redacted]	[redacted]	R	L/M	25	15	P	N	N	N	y	200	50	50	100	100						Impact site		151 38.6882	23 05.9947
58	E	**E3-7**	5	11/3/19 0930	[redacted]	[redacted]	R	L/M	-	15.3	CS	N	N	N	Y	100	100	50	50	25						PSD and settleabi ity		151 38.9066	23 05.9629

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
59	F	**F1-1**	5	11/3/19 0940	[redacted]	[redacted]	R	L	25+	15.6	CS/R	Y	N	N	Y	50	50	250	100	25						Lost metal rod		151 38.9168	23 06.0129
60	E	**E1-3**	5	11/3/19 1000	[redacted]	[redacted]	R	L/M	25	15	-	N	N	N	-	100	100	100	200	200								151 38.8806	23 05.9044
61	E	**E1-1**	5	11/3/19 1010	[redacted]	[redacted]	R	L/M	25	15.1	CS/R (small)	Y	N	N	Y	350	50	150	50	200						Natural CA		151 38.8192	23 05.8971
62	E	**E1-7**	5	11/3/19 1025	[redacted]	[redacted]	R	L/M	25	15.9	CS/R (small)	Y	N	N	Y	100	100	100	100	150					3 (boat)			151 38.8076	23 05.9432
63	E	**E1-5**	5	11/3/19 1035	[redacted]	[redacted]	S	N	25	15.2	CS/R (small)	Y	N	N	Y	50	50	50	25	25						Natural?		151 38.8975	23 05.9211
64	E	**E1-9**	5	11/3/19 1045	[redacted]	[redacted]	S/H	N	25	15.8	CS/R	Y	N	N	Y	50	50	50	100	100						C ient sample		151 38.8564	23 05.9443
65	E	**E1-11**	5	11/3/19 1055	[redacted]	[redacted]	H	N	25	16.8	CS	Y	N	N	Y	20	20	25	25	25								151 38.9065	23 05.9356
66	A	**A3-9**	5	11/3/19 1110	[redacted]	[redacted]	D	L	25	16.8	CS/R	Y	N	N	Y	50	50	50	10	10								151 38.4151	23 05.9395
67	A	**A3-11**	5	11/3/19 1125	[redacted]	[redacted]	D	L	25	16.2	CS/R (small)	N	N	N	Y (No GoPro)	50	50	50	50	-						PSD and settleabi ity No GoPro		151 38.5038	23 05.9481
68	A	**A4-1**	5	11/3/19 1135	[redacted]	[redacted]	D	L	20+	15.5	CS	N	N	N	Y (No GoPro)	50	50	50	20	10						No film (maybe some), no GoPro		151 39.5966	23 05.8791
69	A	**A4-3**	5	11/3/19 1150	[redacted]	[redacted]	D	L	20+	16.2	R/CS	N	N	N	Y (No GoPro)	50	50	50	50	50						No film, no GoPro		151 39.6514	23 05.8869
70	A	**A4-11**	5	11/3/19 1200	[redacted]	[redacted]	D	L	20	16	R	N	N	N	Y	150	150	50	200	100						Grounding Change GoPro		151 39.5907	23 05.9450
71	A	**A4-5**	5	11/3/19 1215	[redacted]	[redacted]	D	L	20	15	R/CS	N	N	N	Y	200	200	200	200	150						Dup icate samples (D3/D4)		151 39.5784	23 05.9139
72	A	**D3**	5	11/3/19 1215	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D3/D4)		151 39.5784	23 05.9139
73	A	**D4**	5	11/3/19 1215	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D3/D4)		151 39.5784	23 05.9139
74	A	**A4-7**	5	11/3/19 1230	[redacted]	[redacted]	D	L/M	20	16	CS	N	N	N	Y	150	50	10	10	10								151 39.6528	23 05.9097

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
75	A	**A4-9**	5	11/3/19 1235	[redacted]	[redacted]	D	L	20	16	CS	N	N	N	Y	150	30	30	30	30								151 39.6083	23 05.9220
76	A	**A1-1**	5	11/3/19 1255	[redacted]	[redacted]	D	L	20	15	CS	N	N	N	Y	20	20	20	20	20		1	6 (green, basking)					151 39.4863	23 05.8187
77	A	**A1-3**	5	11/3/19 1300	[redacted]	[redacted]	D	L	20	15.9	CS	N	N	N	Y	300	20	20	30	30								151 39 5314	23 05.7983
78	A	**A1-7**	5	11/3/19 1310	[redacted]	[redacted]	D	L/M	20+	16	CS	N	N	N	Y	80	80	50	50	150								151 39.5498	23 05.8327
79	A	**A1-5**	5	11/3/19 1320	[redacted]	[redacted]	D	L/M	20	15.7	CS	N	N	N	Y	40	40	40	40	40								151 39.5512	23 05.8013
80	A	**A1-9**	5	11/3/19 1335	[redacted]	[redacted]	D	L/M	20	15.9	R/CS	Y	N	N	Y	40	10	10	10	10								151 39.5391	23 05.8623
81	A	**A1-11**	5	11/3/19 1340	[redacted]	[redacted]	D	M	20	16.5	CS	N	N	N	Y	15	15	20	20	30								151 39.4968	23 05.8683
82	E	**E2-1**	6	12/3/19 0830	[redacted]	[redacted]	R	L	20+	14.7	CS/R	N	N	N	Y	100	75	75	50	50							Wind NW, 10-15 knot gusts Swell <1m	151 38.8916	23 05.9488
83	E	**E2-5**	6	12/3/19 0845	[redacted]	[redacted]	R	L	20	14.8	CS/R	N	N	N	Y	150	150	100	100	50								151 38.9713	23 05.8186
84	E	**E2-7**	6	12/3/19 0850	[redacted]	[redacted]	R	L	20+	14.9	CS	N	N	N	Y	25	25	25	25	25								151 38.9178	23 05.8298
85	E	**E2-3**	6	12/3/19 0900	[redacted]	[redacted]	R	L	20+	14.9	CS	N	N	N	Y	25	50	50	75	100								151 38.8799	23 05.9366
86	E	**E2-9**	6	12/3/19 0915	[redacted]	[redacted]	R	L	20+	15.2	CS/R (5%)	N	N	N	Y	50	50	50	50	50								151 38.9458	23 05.9657
87	E	**E2-11 (T1)**	6	12/3/19 0920	[redacted]	[redacted]	R	L	20+	15.2	CS	N	N	N	Y	50	50	50	50	50						Triplicate sample (T1/T2/T3)		151 38.9372	23 05.9428
88	E	**E2-11 (T2)**	6	12/3/19 0920	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-					Triplicate sample (T1/T2/T3)		151 38.9372	23 05.9428
89	E	**E2-11 (T3)**	6	12/3/19 0920	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-					Triplicate sample (T1/T2/T3)		151 38.9372	23 05.9428
90	EX	**EX-1**	6	12/3/19 0935	[redacted]	[redacted]	R	L	20+	15.4	CS	N	N	N	Y	150	150	150	200	200								151 38.8528	23 05.8675

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
91	EX	**EX-7**	6	12/3/19 0945	[redacted]	[redacted]	R	L	20+	15.4	CS	N	N	N	Y	50	50	50	50	50								151 38.8209	23 05.9970
92	EX	**EX-9**	6	12/3/19 1000	[redacted]	[redacted]	R	L	20+	15.5	CS	N	N	N	Y	25	25	25	25	25								151 39.0362	23 05.9237
93	EX	**EX-5**	6	12/3/19 1025	[redacted]	[redacted]	R	L	20+	14.7	-	N	N	N	Y	100	100	100	100	100						Dup icate sample (D5/D6)		151 38.7766	23 05.9518
94	EX	**D5**	6	12/3/19 1025	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate sample (D5/D6)		151 38.7766	23 05.9518
95	EX	**D6**	6	12/3/19 1025	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate sample (D5/D6)		151 38.7766	23 05.9518
96	EX	**EX-11**	6	12/3/19 1055	[redacted]	[redacted]	R	L	20+	14.9	CS/R (<5%)	N	N	N	Y	50	50	50	50	100		1	2 (green)			Boats x3	Wind NW, 10 knots Swell <1m	151 38.9502	23 05.8748
97	EX	**EX-3**	6	12/3/19 1105	[redacted]	[redacted]	R	L	20+	15.6	CS/R (<5%)	N	N	N	Y	25	25	25	25	25								151 38.7841	23 05.9210
98	C	**C1-1**	6	12/3/19 1110	[redacted]	[redacted]	H	L	20+	14.5	CS/R (<5%)	N	N	N	Y	50	50	50	50	50		1				ADCP spotted at this site (filmed)		151 39.0977	23 05.7079
99	C	**C1-9**	6	12/3/19 1130	[redacted]	[redacted]	S/H	L	20+	14.8	CS/R	N	N	N	Y	50	50	50	25	25	75					Rubble at ground zero PSD and settleabi ity		151 39.0435	23 05.7549
100	C	**C1-5**	6	12/3/19 1135	[redacted]	[redacted]	S/H	N	20+	14.8	CS/R	N	N	N	Y	200	200	200	200	200						Anchor from ADCP spotted		151 39.1072	23 05.7195
101	C	**C1-3**	6	12/3/19 1145	[redacted]	[redacted]	S/H	N	20+	15	R/CS (<5%)	N	N	N	Y	250	200	200	200	200				1 (tiger, 3-4m)		PSD and settleabi ity Rubble at ground zero 30 min break		151 39.0550	23 05.7331
102	C	**C1-11**	6	12/3/19 1225	[redacted]	[redacted]	S/H	N	20+	14	-	N	N	N	Y	100	100	100	100	100			1			No USBL response - reboot system		151 39.097	23 5.766
103	C	**C1-7**	6	12/3/19 1240	[redacted]	[redacted]	S/H	N	20+	14.5	CS	N	N	N	Y	50	50	50	50	50								151 39.0828	23 05.7493
104	A	**A2-1**	6	12/3/19 1250	[redacted]	[redacted]	D	L	20+	15.7	CS	N	N	N	Y	25	25	25	25	25								151 39.5649	23 05.811
105	A	**A2-3**	6	12/3/19 1300	[redacted]	[redacted]	D	L	20+	15.8	CS/R (small)	N	N	N	Y	50	50	50	50	25								151 39.6531	23 05.8081

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
106	A	**A2-11**	6	12/3/19 1310	[redacted]	[redacted]	D	M	20+	15.2	CS/S	N	N	N	Y	20	20	20	20	25		1			1 (gas ship)			151 39.6282	23 05.8632
107	A	**A2-7**	6	12/3/19 1330	[redacted]	[redacted]	D	L/M	20+	14.5	CS/R (small) (<2%)	N	N	N	Y	25	25	25	25	50								151 39.6738	23 05.8262
108	A	**A2-5**	6	12/3/19 1355	[redacted]	[redacted]	D	L/M	20+	15.5	CS/R (small)	N	N	N	Y	150	50	100	100	100								151 39.5882	23 05.8153
109	A	**A2-9**	6	12/3/19 1400	[redacted]	[redacted]	D	M	20+	15	CS	N	N	N	Y	25	50	50	50	50								151 39.6219	23 05.8415
110	A	**A5-1**	6	12/3/19 1420	[redacted]	[redacted]	D	L/M	20	15	CS	N	N	N	Y	10	10	10	10	10								151 39.4222	23 05.9616
111	A	**A5-3**	6	12/3/19 1430	[redacted]	[redacted]	D	L/M	20+	14.9	CS	N	N	N	Y	50	50	50	100	150						Rinsate collected at end		151 39.4921	23 05.9704
112	A	**A5-5**	8	14/3/19 1220	[redacted]	[redacted]	S	L	25	14.2	R/CS (<2%)	N	N	N	Y	180	50	50	50	75						No USBL due to Thru Water Coms interference (defect traced to responder placement on diver) Right on site DGPS Hole		151 39.535	23 5.965
113	A	**A5-7**	8	14/3/19 1230	[redacted]	[redacted]	D	N	25+	14.7	R (large)	N	N	N	Y	60	60	60	40	40		1						151 39.5432	23 05.9893
114	A	**A5-11**	8	14/3/19 1240	[redacted]	[redacted]	D	N	25	25	CS	N	N	N	Y	350	260	150	150	150		1						151 39.4952	23 06.0115
115	A	**A5-9 (T1)**	8	14/3/19 1250	[redacted]	[redacted]	D	N	25	14.5	CS	N	N	N	Y	150	150	180	180	200						Triplicate samples (T1/T2/T3)		151 39.5283	23 06.0017
116	A	**A5-9 (T2)**	8	14/3/19 1250	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 39.5283	23 06.0017
117	A	**A5-9 (T3)**	8	14/3/19 1250	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 39.5283	23 06.0017
118	AX	**AX-1**	8	14/3/19 1255	[redacted]	[redacted]	D	N	25	14.2	CS	N	N	N	Y	50	20	20	20	20								151 39.4900	23 05.8486
119	AX	**AX-3**	8	14/3/19 1310	[redacted]	[redacted]	D	N	25	14.7	CS/R (<5%)	N	N	N	Y	180	180	150	150	150								151 39.4117	23 05.9201

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
120	AX	**AX-5**	8	14/3/19 1315	[redacted]	[redacted]	D	N	25	14.9	CS	N	N	N	Y	150	150	100	80	80		1						151 39.4184	23 05.9732
121	AX	**AX-7**	8	14/3/19 1325	[redacted]	[redacted]	D	N	25+	15	CS	N	N	N	Y	120	120	200	200	80		1 (striped)						151 39.4428	23 06.0201
122	AX	**AX-9**	8	14/3/19 1400	[redacted]	[redacted]	D	N	25	20.8	F/S	N	N	N	Y	150	150	150	200	200		1 (striped)						151 39.5146	23 06.1057
123	AX	**AX-11**	8	14/3/19 1405	[redacted]	[redacted]	D	N	25	13.4	S/CS	N	N	N	Y	200	150	150	100	100						Dup icate samples (D7/D8)		151 39.6617	23 05.9432
124	AX	**D7**	8	14/3/19 1405	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D7/D8)		151 39.6617	23 05.9432
125	AX	**D8**	8	14/3/19 1405	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D7/D8)		151 39.6617	23 05.9432
126	Refer ence	**R1-1**	9	15/3/19 0840	[redacted]	[redacted]	R	L/M	25+	13.2	S/CS	N	N	N	Y	100	100	100	100	100								151 39.3304	23 05.6730
127	Refer ence	**R1-7**	9	15/3/19 0900	[redacted]	[redacted]	R	L/M	20+	13.8	CS	N	N	N	Y	150	150	150	150	150								151 39.3682	23 05.7205
128	Refer ence	**R1-3**	9	15/3/19 0910	[redacted]	[redacted]	R	L/M	15-20	13.8	CS/R (small)	N	N	N	Y	50	50	10	25	75						PSD and settleabi ity		151 39.3580	23 05.6993
129	Refer ence	**R1-11**	9	15/3/19 0915	[redacted]	[redacted]	R	L/M	20	13.8	CS/S	N	N	N	Y	100	50	50	25	150						Uniform sand		151 39.3145	23 05.7163
130	Refer ence	**R1-5**	9	15/3/19 0930	[redacted]	[redacted]	R	L/M	20	13.5	CS/R (<1%)	N	N	N	Y	25	25	25	25	25						Dup icate samples (D9/D10) Thin layer of sediment, only 2x250ml collected)		151 39.3151	23 05.6759
131	Refer ence	**D9**	9	15/3/19 0930	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D9/D10) Thin layer of sediment, only 2x250ml collected)		151 39.3151	23 05.6759
132	Refer ence	**D10**	9	15/3/19 0930	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D9/D10) Thin layer of sediment, only		151 39.3151	23 05.6759

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
																										2x250ml collected)			
133	Refer ence	**R1-9**	9	15/3/19 0945	[redacted]	[redacted]	R	L/M	20	13.8	CS	N	N	N	Y	100	100	100	100	100						PSD and settleabi ity		151 39.2910	23 05.7420
134	C	**C3-1**	9	15/3/19 1000	[redacted]	[redacted]	R	L	20+	13.8	CS/R (~30%)	N	N	N	Y	50	50	50	50	50						PSD and settleabi ity		151 39.0687	23 05.8228
135	C	**C3-5**	9	15/3/19 1010	[redacted]	[redacted]	R	L	20+	13.8	R (small) / CS	N	N	N	Y	25	25	25	25	25						No USBL fix due to Thru Water Coms interference (suspect diver position masking responder output) Anoxic black rubble (smell) - some halimeda Ground zero - terrestrial gravel- ike (bluemetal photos) Check footage for dead coral etc nearby		151 38.970	23 5.774
136	C	**C3-3**	9	15/3/19 1020	[redacted]	[redacted]	R	L	20+	13.8	R/CS	N	N	N	Y	50	50	50	50	50						G.foot pural rub		151 39.0166	23 05.7575
137	C	**C3-11**	9	15/3/19 1030	[redacted]	[redacted]	R	L	20+	13.5	R	N	N	N	Y	50	50	50	75	75						Rubble is ground zero		151 39.0132	23 05.8065
138	C	**C3-7**	9	15/3/19 1040	[redacted]	[redacted]	R	L	20+	13.5	CS	N	N	N	Y	200	200	200	200	200								151 39.0256	23 05.7779
139	C	**C3-9**	9	15/3/19 1050	[redacted]	[redacted]	R	L	20+	13.8	R/CS	N	N	N	Y	150	150	150	150	150				5 (tawny nurse)		Anoxic gravel - recently dead coral in sediment		151 39.0117	23 05.7944
140	C	**C4-1**	9	15/3/19 1120	[redacted]	[redacted]	R	L	20+	13.2	CS	N	N	N	Y	25	25	25	25	25						Very little sediment here		151 38.8490	23 05.7543
141	C	**C4-9**	9	15/3/19 1130	[redacted]	[redacted]	R	L	20+	13.1	CS/R	N	N	N	Y	30	30	30	30	30						Dup icate samples (D11/D12) PSD for primary lab		151 38.9146	23 05.7792

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
142	C	**D11**	9	15/3/19 1130	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D11/D12)		151 38.9146	23 05.7792
143	C	**D12**	9	15/3/19 1130	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D11/D12)		151 38.9146	23 05.7792
144	C	**C4-3**	9	15/3/19 1140	[redacted]	[redacted]	R	L	20+	13.8	R/CS	N	N	N	Y	50	50	50	50	25								151 38.8508	23 05.7660
145	C	**C4-5**	9	15/3/19 1150	[redacted]	[redacted]	R	N	20	13.8	R/CS (<5%)	N	N	N	Y	50	50	50	10	20								151 38.9066	23 05.7694
146	C	**C4-7**	9	15/3/19 1200	[redacted]	[redacted]	R	N	20+	13.5	R/CS (<5%)	N	N	N	Y	50	50	100	25	20								151 38.8653	23 05.7821
147	C	**C4-11 (T1)**	9	15/3/19 1215	[redacted]	[redacted]	R	N	20+	13.2	R	N	N	N	Y	200	400	300	300	400						Triplicate samples (T1/T2/T3)		151 38.9427	23 05.7760
148	C	**C4-11 (T2)**	9	15/3/19 1215	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 38.9427	23 05.7760
149	C	**C4-11 (T3)**	9	15/3/19 1215	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 38.9427	23 05.7760
150	F	**F1-3**	9	15/3/19 1225	[redacted]	[redacted]	H	N	20	13.2	CS/R (<10%)	N	N	N	Y	150	150	150	100	50		1						151 38.9687	23 06.0142
151	F	**F1-9**	9	15/3/19 1240	[redacted]	[redacted]	H	N	20	13.8	CS	N	N	N	Y	150	150	150	150	100								151 38.9527	23 06.0495
152	F	**F1-5**	9	15/3/19 1255	[redacted]	[redacted]	S/H	N	20	13.9	CS/R	N	N	N	Y	150	150	150	100	100		1						151 38.9524	23 06.0188
153	F	**F1-11**	9	15/3/19 1300	[redacted]	[redacted]	S/H	N	20	13.4	-	N	N	N	Y	50	50	100	75	75								151 38.9823	23 06.0577
154	F	**F1-7**	9	15/3/19 1335	[redacted]	[redacted]	H	N	20	14.1	CS	N	N	N	Y	100	100	100	100	100						Dup icate samples (D13/D14) PSD for primary lab		151 38.9603	23 06.0278
155	F	**D13**	9	15/3/19 1335	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D13/D14)		151 38.9603	23 06.0278
156	F	**D14**	9	15/3/19 1335	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D13/D14)		151 38.9603	23 06.0278

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
157	F	**F3-1**	9	15/3/19 1345	[redacted]	[redacted]	S/H	L	20	15	-	N	N	N	-	50	50	100	100	150								151 38.8528	23 06.0379
158	F	**F3-11**	9	15/3/19 1355	[redacted]	[redacted]	D	L	20	14.8	CS	N	N	N	Y	100	100	100	100	100								151 38.9093	23 06.1118
159	F	**F3-3**	9	15/3/19 1405	[redacted]	[redacted]	D	L	20+	14.1	R/CS	N	N	N	Y	50	50	50	50	50								151 38.8667	23 06.0360
160	F	**F3-9**	9	15/3/19 1415	[redacted]	[redacted]	D	L	20	14.1	CS	N	N	N	Y	50	50	50	50	50								151 38.9064	23 06.0987
161	F	**F3-5**	9	15/3/19 1425	[redacted]	[redacted]	D	L	20+	14.2	-	N	N	N	Y	25	25	50	50	50				1 (nurse?)				151 38.8923	23 06.0602
162	A	**A7-1**	10	16/3/19 1215	[redacted]	[redacted]	R	L	20+	13.2	CS/R (<5%)	N	N	N	Y	150	150	300	100	200								151 39.5365	23 06.0348
163	A	**A7-3**	10	16/3/19 1240	[redacted]	[redacted]	R	L	20	14.4	CS	N	N	N	Y	20	20	20	30	30								151 39.4908	23 06.0398
164	A	**A7-5**	10	16/3/19 1250	[redacted]	[redacted]	R	N	20	14.3	CS/R	N	N	N	Y	100	100	50	50	50		1						151 39.5050	23 06.0469
165	A	**A7-11**	10	16/3/19 1300	[redacted]	[redacted]	R	L	20	17.9	FS/S	N	N	N	Y	30	30	30	30	30						PSD and settleabi ity		151 39.5002	23 06.0867
166	A	**A7-7**	10	16/3/19 1315	[redacted]	[redacted]	R	L	20	14.6	S/CS	N	N	N	Y	30	30	30	30	30								151 39.5362	23 06.0494
167	A	**A7-9**	10	16/3/19 1320	[redacted]	[redacted]	R	N	20+	14.2	S/CS	N	N	N	Y	25	25	25	30	30						Random spots, patchy		151 39.5133	23 06.0655
168	A	**A8-3**	10	16/3/19 1345	[redacted]	[redacted]	R	L/M	20	15.6	CS	N	N	N	Y	25	25	25	25	25								151 39.6108	23 06.0485
169	A	**A8-9**	10	16/3/19 1355	[redacted]	[redacted]	R	L/M	20+	17.6	CS	N	N	N	Y	100	50	50	50	25								151 39.5831	23 06.0664
170	A	**A8-11**	10	16/3/19 1405	[redacted]	[redacted]	R	L/M	20	19.6	FS/S	N	N	N	Y	100	80	80	50	50								151 39.6439	23 06.0758
171	A	**A8-7**	10	16/3/19 1415	[redacted]	[redacted]	R	L/M	20	15.7	S/CS	N	N	N	Y	100	25	25	25	30								151 39.6102	23 06.0625
172	Refer ence	**R2-1**	11	17/3/19 0930	[redacted]	[redacted]	D	M/S	20+	15.1	S/CS	Y	N	N	Y	50	50	50	50	50						PSD and settleabi ty High current		151 38.5490	23 06.0359
173	CX	**CX-1**	11	17/3/19 0955	[redacted]	[redacted]	D	M/S	20	12.4	R (small) / CS	Y	N	N	Y	100	100	100	100	100						PSD and settleabi ity Pebble rubble		151 39.0141	23 05.7249

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
																										Diving suspended due to current till 1030			
174	CX	**CX-3**	11	17/3/19 1035	[redacted]	[redacted]	D	M/S	20	13.8	S/CS	N	N	N	Y	50	75	75	75	75								151 38.9672	23 05.8140
175	CX	**CX-5**	11	17/3/19 1045	[redacted]	[redacted]	D	L/M	20	14.2	S/CS	N	N	N	Y	50	50	50	25	5								151 39.0261	23 05.8527
176	CX	**CX-11**	11	17/3/19 1100	[redacted]	[redacted]	D	L/M	20	14.7	CS/R	Y	N	N	Y	100	100	100	100	150								151 39.1711	23 05.7555
177	CX	**CX-7**	11	17/3/19 1110	[redacted]	[redacted]	D	L/M	20	13.8	CS	Y	N	N	Y	50	50	50	50	50						Low tide at 1200		151 39.0718	23 05.8652
178	CX	**CX-9 (T1)**	11	17/3/19 1125	[redacted]	[redacted]	D	L	20	14.8	CS/R (10%)	N	N	N	Y	100	100	150	75	75						Triplicate samples (T1/T2/T3) More rubble in T1		151 39.1354	23 05.8239
179	CX	**CX-9 (T2)**	11	17/3/19 1125	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 39.1354	23 05.8239
180	CX	**CX-9 (T3)**	11	17/3/19 1125	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 39.1354	23 05.8239
181	Refer ence	**R2-11**	11	17/3/19 1145	[redacted]	[redacted]	D	L	20	14	R/CS	Y	N	N	-	150	150	150	100	100						Photo of CA Video of depths on rod Small hole sampled, rubble pit		151 38.5278	23 06.0830
182	Refer ence	**R2-3**	11	17/3/19 1155	[redacted]	[redacted]	D	L	20	13.5	R/CS (<5%)	Y	N	N	Y	100	100	100	100	100						Lots of CA Live coral recruits (millepora, turbinaria) 2x bivalves		151 38.5116	23 06.0401
183	Refer ence	**R2-9**	11	17/3/19 1210	[redacted]	[redacted]	D	L	20	14.8	CS/R (small) (<2%)	Y	N	N	Y	50	50	50	50	50								151 38.5600	23 06.0661
184	Refer ence	**R2-7 (T1)**	11	17/3/19 1220	[redacted]	[redacted]	S/L	N	20	14.2	CS	Y	N	N	Y	50	50	75	75	75						Sampled from hole in reef Triplicate samples (T1/T2/T3)		151 38.5200	23 06.0567
185	Refer ence	**R2-7 (T2)**	11	17/3/19 1220	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 38.5200	23 06.0567

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
186	Reference	**R2-7 (T3)**	11	17/3/19 1220	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Triplicate samples (T1/T2/T3)		151 38.5200	23 06.0567
187	Reference	**R2-5**	11	17/3/19 1245	[redacted]	[redacted]	S/L	N	20	13.5	S/CS	Y	N	N	Y	50	50	50	50	50						Photo of CA No USBL		151 38.540	23 6.041
188	F	**F3-7**	11	17/3/19 1300	[redacted]	[redacted]	S/L	L/N	20+	12.1	R (small)	Y	N	N	Y	200	200	200	150	100		1 (olive?)				C ient example collected True grounding? CA <0.5%		151 38.8841	23 06.0833
189	FX	**FX-1**	11	17/3/19 1305	[redacted]	[redacted]	S	N/L	20	13.8	CS/R (<2%)	Y	N	N	Y	100	100	100	100	50								151 38.8460	23 06.0263
190	FX	**FX-9**	11	17/3/19 1325	[redacted]	[redacted]	S/L	N/L	20	13.5	CS/R	Y	N	N	Y	100	100	150	150	50								151 39.0001	23 06.0827
191	FX	**FX-3**	11	17/3/19 1335	[redacted]	[redacted]	S/L	N/L	1	13.5	CS/R (<2%)	Y	N	N	Y	250	250	150	150	100						Ca <5% PSD and settleabi ity		151 38.8636	23 06.0875
192	FX	**FX-11**	11	17/3/19 1345	[redacted]	[redacted]	R	L	20	13.8	CS/R	Y	N	N	Y	50	50	150	150	150	200							151 39.0819	23 06.0452
193	FX	**FX-5**	11	17/3/19 1355	[redacted]	[redacted]	R	L	20	14.2	CS/R (<2%)	Y	N	N	Y	100	100	100	100	150						PSD and settleabi ity		151 38.8917	23 06.1288
194	FX	**FX-7**	11	17/3/19 1405	[redacted]	[redacted]	R	L	20	13.2	CS/R	Y	N	N	Y	50	50	50	50	25						CA photo		151 38.9288	23 06.1375
195	F	**F1-12**	12	18/3/19 0925	[redacted]	[redacted]	D	L/M	15	15.4	CS/R (<1%)	N	N	N	Y	20	20	20	50	100		3 (2x banded, 1x olive)	1 (green)			USBL accuracy <0.7m	Wind ENE <10 knots Swell <0.5m	151 38.9979	23 06.0806
196	F	**F2-2a**	12	18/3/19 0930	[redacted]	[redacted]	D	M/S	15	15.1	R/CS (<5%)	N	N	N	Y	50	50	50	50	50		1				PSD		151 38.9020	23 06.0370
197	F	**F3-6**	12	18/3/19 0940	[redacted]	[redacted]	D	M	15	15.1	R/CS (<10%)	N	N	N	Y	100	100	50	50	50								151 38.8846	23 06.0694
198	F	**F3-10**	12	18/3/19 0950	[redacted]	[redacted]	D	M	15	15.5	CS/R (<20%)	N	N	N	Y	100	100	50	50	150								151 38.9115	23 06.1100
199	F	**F3-2**	12	18/3/19 1000	[redacted]	[redacted]	D	M/S	15+	14.5	CS/R (<10%)	N	N	N	Y	100	100	100	100	100						Anoxic sediment, gravel like		151 38.8657	23 06.0460
200	E	**E3-10**	12	18/3/19 1010	[redacted]	[redacted]	D	M/S	15	14.9	R (large) / CS (<5%)	N	N	N	Y	50	50	100	100	100						PSD		151 38.8670	23 06.0016
201	E	**E1-6**	12	18/3/19 1020	[redacted]	[redacted]	D	M/S	15	15.2	CS/R (<5%)	Y	N	N	Y (No GoPro)	50	50	50	50	50						Shells and small cones		151 38.9326	23 05.9244

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
																										PSD No GoPro			
202	C	**C2-8b**	12	18/3/19 1030	[redacted]	[redacted]	D	M/S	15+	15.5	R/CS	N	N	N	Y	50	50	50	50	50								151 39.1219	23 05.8127
203	C	**C4-8**	12	18/3/19 1045	[redacted]	[redacted]	D	M/S	15+	-	R/CS	N	N	N	Y	25	25	25	25	25						Gravel ike		151 38.8999	23 05.7802
204	C	**C4-6**	12	18/3/19 1100	[redacted]	[redacted]	D	M	15+	15.5	R (small pebbles) /CS (<2%)	N	N	N	Y	250	250	250	150	150		1 (banded)	1	1 (tiger)		Ripples and valleys PSD		151 38.9613	23 05.7692
205	A	**A3-10**	12	18/3/19 1140	[redacted]	[redacted]	D	L	15+	14.5	CS/R	N	N	N	Y	50	50	50	50	100								151 39.4916	23 05.9453
206	A	**A4-6**	12	18/3/19 1150	[redacted]	[redacted]	D	M	15+	14.1	CS/R (<2%)	N	N	N	Y	10	10	10	10	10		1			2 (boats)	Boats >500m away		151 39.6253	23 05.9099
207	A	**A5-4**	12	18/3/19 1205	[redacted]	[redacted]	D	L	15+	13.8	CS/R (<20%)	N	N	N	Y	100	100	100	50	50								151 39.4981	23 05.9735
208	A	**A6-4a**	12	18/3/19 1215	[redacted]	[redacted]	D	L	15+	14	CS/R (<1%)	N	N	N	Y (No GoPro)	50	50	50	100	100						Done before No GoPro		151 39.6217	23 05.9851
209	A	**A6-10a**	12	18/3/19 1225	[redacted]	[redacted]	D	L	15+	13.1	CS/R (<5%)	N	N	N	Y	25	25	25	25	25								151 39.5964	23 06.0157
210	A	**A7-4**	12	18/3/19 1240	[redacted]	[redacted]	D	L	15+	13.5	CS/R (<5%)	N	N	N	Y (No GoPro)	100	100	25	25	25						No GoPro		151 39.4939	23 06.0476
211	A	**A6-8a**	12	18/3/19 1300	[redacted]	[redacted]	D	L	15+	13.6	R (gravel) / CS (<5%)	N	N	N	Y (No GoPro)	75	50	50	100	150					3 (boats)	No GoPro		151 39.6049	23 06.0013
212	A	**A8-6**	12	18/3/19 1310	[redacted]	[redacted]	S/L	N/L	15	14.5	CS	N	N	N	Y (No GoPro)	75	75	75	75	75						No GoPro		151 39.5705	23 06.0600
213	F	**F2-13**	12	18/3/19 1325	[redacted]	[redacted]	S/L	N	15+	12.5	R/CS (<5%)	N	N	N	Y (No GoPro)	200	200	200	200	50	2 x 50					No GoPro New site in grounding area, ground zero		151 38.9474	23 06.1072
214	F	**F2-14**	12	18/3/19 1335	[redacted]	[redacted]	S/L	N	20	12.5	R	N	N	N	Y (No GoPro)	150	150	150	150	100						No GoPro Ground zero		151 38.9420	23 06.1003
215	FX	**FX-2**	12	18/3/19 1350	[redacted]	[redacted]	S/L	N	15-20	13.5	CS	N	N	N	Y (No GoPro)	100	100	200	200	300						No GoPro		151 38.8388	23 06.0386
216	FX	**FX-4**	12	18/3/19 1400	[redacted]	[redacted]	S/L	N	15+	13.4	CS	Y	N	N	Y (No GoPro)	100	100	50	50	150						No GoPro		151 38.8645	23 06.1145

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
217	FX	**FX-6**	12	18/3/19 1410	[redacted]	[redacted]	S/L	N	20+	13.7	CS	Y	N	N	Y (No GoPro)	50	50	50	50	20						No GoPro		151 38.8772	23 06.1453
218	FX	**FX-8**	12	18/3/19 1420	[redacted]	[redacted]	S/L	N	20+	13.4	CS/R (<5%)	Y	N	N	Y (No GoPro)	100	100	80	80	80						No GoPro		151 38.9964	23 06.1574
219	FX	**FX-10**	12	18/3/19 1430	[redacted]	[redacted]	R	L	20+	-	CS	N	N	N	Y (No GoPro)	250	200	150	150	100		1 (o ive)				No GoPro		151 39.0269	23 06.0667
220	FX	**FX-12**	12	18/3/19 1435	[redacted]	[redacted]	R	L	20+	13.5	CS/R (<5%)	Y	N	N	Y (No GoPro)	250	200	150	100	100						No GoPro Dark pebble (photo) and collected		151 39.0195	23 06.0093
221	F	**F3-4**	12	18/3/19 1445	[redacted]	[redacted]	R	L	15+	12.5	P/R/CS	N	N	N	Y (No GoPro)	100	100	100	100	200						No GoPro		151 38.8712	23 06.0488
222	F	**F3-8**	12	18/3/19 1450	[redacted]	[redacted]	R	L	20+	13.8	R/CS (<2%)	N	N	N	Y (No GoPro)	200	200	100	5	5						No GoPro		151 38.9015	23 06.0848
223	CX	**CX-2**	13	19/3/19 1030	[redacted]	[redacted]	D	M/S	15+	15.2	CS/R	N	N	N	Y	100	150	150	200	250			1 (green)			1x crinoid in sea	Wind <5 knots, variable Swell<0.5 m	151 38.9323	23 05.7950
224	CX	**CX-4**	13	19/3/19 1045	[redacted]	[redacted]	D	M/S	15+	15.5	S/CS	N	N	N	Y	20	20	20	20	20								151 38.9801	23 05.8187
225	CX	**CX-6**	13	19/3/19 1055	[redacted]	[redacted]	D	M/S	15+	15	S/CS	N	N	N	Y	25	25	25	25	25						PSD		151 39.0855	23 05.8517
226	CX	**CX-8**	13	19/3/19 1105	[redacted]	[redacted]	D	M/S	15+	15.7	R (gravel) / CS	N	N	N	Y	50	50	50	50	50				1 (tiger)	2	Some anoxic gravel		151 39.1480	23 05.8438
227	CX	**CX-10**	13	19/3/19 1150	[redacted]	[redacted]	D	M/S	15+	14.1	R/P/CS	N	N	N	Y	30	30	30	30	30		2 (olive)	4 (green)			Small pateches of sediment		151 39.1760	23 05.7949
228	CX	**CX-12**	13	19/3/19 1205	[redacted]	[redacted]	D	M	15+	15.3	CS/R (small)	Y	N	N	Y	50	50	50	100	100								151 39.1495	23 05.7238
229	EX	**EX-2**	13	19/3/19 1220	[redacted]	[redacted]	D	L/M	15+	13.9	CS/R (small)	Y	N	N	Y	50	100	100	100	100								151 38.7793	23 05.8979
230	EX	**EX-4**	13	19/3/19 1230	[redacted]	[redacted]	D	L/M	15+	13.8	S/CS	N	N	N	Y	50	50	50	50	50								151 38.7849	23 05.9306
231	EX	**EX-6**	13	19/3/19 1320	[redacted]	[redacted]	D	L	15+	13.2	S/CS	N	N	N	Y	50	25	25	25	25			1 (green)					151 38.8059	23 05.9918
232	EX	**EX-8**	13	19/3/19 1330	[redacted]	[redacted]	D	L	20+	13.5	CS/R (<2%)	Y	N	N	Y	100	100	100	50	50								151 39.0190	23 05.9698

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
233	EX	**EX-10**	13	19/3/19 1335	[redacted]	[redacted]	D	L	20+	13.5	S/CS	N	N	N	Y	25	25	25	25	25								151 39.0319	23 05.8866
234	EX	**EX-12**	13	19/3/19 1350	[redacted]	[redacted]	D	L	25	13.5	CS/R (<2%)	Y	N	N	Y	100	100	100	100	100				1 (nurse?)				151 38.8828	23 05.8843
235	AX	**AX-2**	13	19/3/19 1400	[redacted]	[redacted]	D	N/L	25+	14.1	CS/R (<5%)	Y	N	N	Y	50	50	50	50	50						GoPro playing up so swapped		151 39.4387	23 05.8815
236	AX	**AX-4**	13	19/3/19 1405	[redacted]	[redacted]	S/L	N	20+	13.2	CS/R	Y	N	N	Y	50	50	50	100	100						PSD		151 39.3954	23 05.9334
237	AX	**AX-6**	13	19/3/19 1425	[redacted]	[redacted]	S/L	N	20+	13.8	CS/R (<2%)	Y	N	N	Y	100	100	100	100	150			1 (green)					151 39.4134	23 06.0164
238	AX	**AX-8**	13	19/3/19 1430	[redacted]	[redacted]	S/L	N	20+	14.5	CS/R	N	N	N	Y	100	100	100	100	50								151 39.4432	23 06.0691
239	AX	**AX-10**	13	19/3/19 1435	[redacted]	[redacted]	S/L	N	25	14.5	CS/R (<8%)	Y	N	N	Y	50	25	25	25	25								151 39.6908	23 06.0173
240	AX	**AX-12**	13	19/3/19 1450	[redacted]	[redacted]	S/L	N	25+	14.2	CS/R (<5%)	Y	N	N	Y	50	50	50	150	150								151 39.6677	23 05.9155
241	A	**A5-6**	13	19/3/19 1455	[redacted]	[redacted]	S/L	N	25+	13	CS/R (<2%)	N	N	N	Y	100	50	50	25	25						Anoxic (small gravel)		151 39.5226	23 05.9855
242	A	**A5-2**	13	19/3/19 1500	[redacted]	[redacted]	R	N/L	20+	13.6	CS/R (<1%)	N	N	N	Y	100	100	100	100	100								151 39.4480	23 05.9680
243	A	**A4-1a**	14	20/3/19 0800	[redacted]	[redacted]	R	N/L	10-15	16.8	CS/R (<5%)	N	N	N	Y	50	50	50	5	5						1 dolphin (pink underneath)		151 39.5995	23 05.0801
244	A	**A4-8**	14	20/3/19 0810	[redacted]	[redacted]	R	N/L	10-15	17.3	R/CS (<5%)	N	N	N	Y	100	100	100	100	100		1						151 39.5556	23 05.9239
245	A	**A4-10**	14	20/3/19 0820	[redacted]	[redacted]	R	N/L	10-15	16.8	CS/R (<5%)	N	N	N	Y	100	100	100	100	100		1						151 39.6309	23 05.9259
246	A	**A4-4**	14	20/3/19 0830	[redacted]	[redacted]	S	L	10-15	17.8	CS/R (<2%)	N	N	N	Y	100	100	150	150	75						Minor anoxic black gravel (photo)		151 39.5756	23 05.9005
247	A	**A4-12**	14	20/3/19 0840	[redacted]	[redacted]	H/S	N	10-15	16.9	CS	N	N	N	Y	100	100	75	50	-								151 39.6336	23 05.9369
248	A	**A4-2**	14	20/3/19 0850	[redacted]	[redacted]	H/S	N/L	10-15	18.8	CS	N	N	N	Y	150	150	150	150	150								151 39.6177	23 05.8937
249	A	**A5-8 (T1)**	14	20/3/19 0900	[redacted]	[redacted]	H	N/L	10-15	16.2	CS/R	N	N	N	Y	100	100	100	100	100						Triplicate samples (T1/T2/T3)		151 39.5129	23 05.9973

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
250	A	**A5-8 (T2)**	14	20/3/19 0900	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					Triplicate samples (T1/T2/T3)		151 39.5129	23 05.9973
251	A	**A5-8 (T3)**	14	20/3/19 0900	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					Triplicate samples (T1/T2/T3)		151 39.5129	23 05.9973
252	A	**A5-10**	14	20/3/19 0910	[redacted]	[redacted]	D	L	10-15	16.8	CS/R (<5%)	N	N	N	Y	150	150	150	150	150						Anoxic gravel (low %) (photo)		151 39.4770	23 06.0160
253	A	**A5-12**	14	20/3/19 0930	[redacted]	[redacted]	D	M	10-15	16	CS	N	N	N	Y (Photo pan)	10	10	10	10	10						Very little sediment		151 39.5227	23 06.0232
254	A	**A3-2**	14	20/3/19 0945	[redacted]	[redacted]	D	M/S	15	17	CS	N	N	N	Y	20	20	20	25	25								151 39.4851	23 05.8914
255	A	**A3-4**	14	20/3/19 1030	[redacted]	[redacted]	D	S	15+	15.5	CS	N	N	N	Y (No GoPro)	20	20	20	20	30						No GoPro		151 39.5269	23 05.9035
256	A	**A3-12**	14	20/3/19 1040	[redacted]	[redacted]	D	M/S	15+	15.9	P/CS (<2%)	N	N	N	Y	25	25	25	25	25						PSD		151 39.5349	23 05.9338
257	A	**A3-6**	14	20/3/19 1045	[redacted]	[redacted]	D	M/S	15	16.5	CS/R (<2%)	Y	N	N	Y	50	50	50	50	50		1						151 39.4748	23 05.9257
258	A	**A3-8**	14	20/3/19 1105	[redacted]	[redacted]	D	M/S	15	15.5	CS	N	N	N	Y	25	25	25	25	50								151 39.4664	23 05.9226
259	A	**A3-10a**	14	20/3/19 1115	[redacted]	[redacted]	D	M/S	15+	15.6	CS/P/R	N	N	N	Y	150	100	100	100	100		1 (o ive)				Some anoxic gravel		151 39.4909	23 05.9478
260	A	**A1-2**	14	20/3/19 1130	[redacted]	[redacted]	D	M/S	15	13.9	CS	N	N	N	Y	150	150	150	150	150								151 39.5180	23 05.8152
261	A	**A1-4**	14	20/3/19 1135	[redacted]	[redacted]	D	M/S	15	15.1	-	N	N	N	Y	25	25	25	10	10						Aborted due to current		151 39.5424	23 05.8027
262	A	**A1-6**	14	20/3/19 1215	[redacted]	[redacted]	D	M/S	15	13.8	CS	Y	N	N	Y	20	20	15	15	15								151 39.5459	23 05.8284
263	A	**A1-8**	14	20/3/19 1225	[redacted]	[redacted]	D	M/S	15+	14.7	CS/R (<1%)	Y	N	N	Y	100	100	100	50	50			5 (green)					151 39.5473	23 05.8581
264	A	**A1-10**	14	20/3/19 1340	[redacted]	[redacted]	D	L	15	13.6	CS	N	N	N	Y	10	10	10	10	10			1 (green)					151 39.5021	23 05.8016
265	A	**A1-12**	14	20/3/19 1345	[redacted]	[redacted]	D	L	20+	14	CS/R (<1%)	N	N	N	Y	25	25	25	25	25						Dup icate samples (D15/D16)		151 39.5331	23 05.9529

Abbreviations

Sample Collector: [redacted]

Sample Processor: [redacted]

Tidal state: Rising - R, Dropping - D, Slack - S, Low - L, High – H

Current state: Nil - N, Low - L, Medium -M, Strong – S

Sediment type: Fine Sand - FS, Sand - S, Coarse Sand - CS, Rubble - R, Pebbles - P

Sample Number	Priority Area	Sample ID	Sample Day	Date and time	Sample Collector	Sediment Processor	Tidal State	Current State	Underwater Visibility (m)	Sampling Depth (m)	Sediment Type (in order of dominace) and %age	Coraline Algae present (Y/N)	Evidence of paint flakes	Paint Flakes Collected	Photos taken (Panorama and Log)	Depth of Sediment measurement (mm) 1	Depth of Sediment measurement (mm) 2	Depth of Sediment measurement (mm) 3	Depth of Sediment measurement (mm) 4	Depth of Sediment measurement (mm) 5	Depth of Sediment measurement (mm) additional/s	Snakes (count)	Turtles (count)	Sharks (count)	Vessels (count)	General comments	Weather Observations	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
266	A	**D15**	14	20/3/19 1345	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D15/D16)		151 39.5331	23 05.9529
267	A	**D16**	14	20/3/19 1345	[redacted]	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-						Dup icate samples (D15/D16)		151 39.5331	23 05.9529

Appendix B
Daily Site Diaries

Publication note: Appendix B not publicly released

Appendix C
Dive Logs

Publication note: Appendix C not publicly released